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Remarks
ON
THE DIAGNOSIS OF ACUTE ABDOMINAL CRISES.*

BY

ARTHUR H. BURGESS, F.R.C.S., M.B., CH.B., M.SC.,
HONORARY SURGEON, MANCHESTER ROYAL INFIRMARY.

IN these two lectures I propose to discuss the diagnosis of acute abdominal crises in a general sense, and to consider first of all, individually, the various symptoms and signs met with in such crises, attributing to each its relative value as a factor in diagnosis, and as an indication for treatment; and secondly, these same symptoms arranged in groups, such as are observed clinically in the different types of abdominal crises.

First, then, let us consider the diagnostic value of such symptoms as may be present in an acute abdominal crisis.

GENERAL SYMPTOMS.

The general symptoms include:

1. Various degrees of shock or collapse.
2. Alterations in the frequency and character of the pulse.
3. Changes in the temperature.
4. Alterations in the type of respiration—"thoracic" type.
5. Other symptoms, such as a dry and furred condition of the tongue, hiccough, strangury, and tenesmus.

Speaking generally, one may say that, although these general symptoms are useful in directing attention to the possibility of a crisis having occurred, yet they give no clue to its nature, nor are they alone of much value as indications for treatment. They may occur alike in serious and comparatively trivial abdominal lesions, as evidenced, on the one hand, by the profound degrees of shock which may accompany a simple contusion of the abdominal wall, or be present during an attack of colic; while, on the other hand, cases of perforation of a viscus are sometimes seen with practically no rise of temperature or pulse, and with very little, if any, shock. In fact, so unlikely is it that any material assistance will be obtained from a consideration of the temperature or pulse that I feel strongly that fewer cases would pass unrecognized in their early stages were it to become the universal rule never to take the temperature nor count the pulse in a suspected abdominal crisis; they are only too likely to mislead. The *persistence* of shock and of the other general symptoms is of far greater diagnostic importance than is their initial degree.

LOCAL SYMPTOMS.

It is, then, mainly upon the local symptoms and signs—those referable to the abdomen itself—that we have to rely in deciding questions of diagnosis and treatment in any acute abdominal crisis. These include:

1. Abdominal pain.
2. Cutaneous hyperalgesia ("viscero-sensory" reflex).
3. Tenderness, local and general.
4. Nausea, vomiting.
5. Muscular rigidity ("viscero-motor" reflex).
6. Abdominal distension.
7. Presence of free gas in the peritoneal cavity.
8. Presence of free fluid in the peritoneal cavity.
9. Local abdominal or pelvic swelling.
10. Certain changes ascertainable upon rectal examination.

1. *Abdominal Pain.*

It is now well recognized that the viscera are themselves quite insensitive to touch or pain, and it has been shown by Mackenzie and many others that pain resulting from a lesion of a viscus is felt not in that viscus itself, but is referred to the peripheral distribution of the spinal nerves arising from those segments of the spinal cord with which that viscus is connected through its sympathetic nerve supply. Since the abdominal wall is supplied by the lower six dorsal nerves and the abdominal viscera are connected via the sympathetic with these same nerves, it follows that pain arising from a morbid state of an abdominal viscus is referred to the peripheral distribution of the lower six dorsal nerves—that is, to the mid-line of the anterior abdominal wall. It must, however, be remembered that these nerves have both posterior and lateral branches, so that in some cases pain is referred to the back or around the side of the chest and abdomen as well as, or even instead of, to the middle line anteriorly.

So far as the alimentary canal is concerned, reflex pain from the stomach is referred to the peripheral distribution of the fifth to eighth dorsal nerves—that is, between the xiphoid cartilage and the umbilicus; that from the duodenum close above the umbilicus; that from the small intestine and appendix (eighth to eleventh dorsal) to the "umbilical" area (the umbilicus corresponding to the tenth dorsal); and that from the large intestine to the mid-hypogastric line. From the liver, gall bladder, and bile ducts (seventh to ninth dorsal) pain is referred to the lower part of the epigastrium and also sometimes to the lower angle of the scapula (eighth dorsal). From the close association between the liver and diaphragm, supplied by the phrenic nerve, we find reflex pain transmitted along the superficial cervical nerves arising from the spinal cord at the same level as the phrenic (third and fourth cervical), resulting in pain felt over the outer and anterior aspects of the shoulder—the characteristic "shoulder tip" pain in gall stones, much less frequently observed clinically than the stress laid upon it in textbooks would lead one to anticipate.

All pain, then, felt in the early stages of an acute abdominal crisis is of this *reflex* character, and is not, therefore, localized to the situation of the viscus primarily at fault. Later pain, however, that due to irritation of the parietal peritoneum, is always felt at the site of irritation, and has, consequently, considerable localizing value. It is well known that there is a rich nerve-plexus in the connective tissue underlying the parietal peritoneum, and as this is in connexion with the cerebro-spinal system, unlike the visceral peritoneum which is supplied entirely by the sympathetic, accurate localization is possible. Let us consider the subjective pain felt during an attack of acute appendicitis. Its most characteristic feature is that it commences not over the region of the appendix at all, but is referred to the area of the umbilicus—in fact any acute abdominal attack in which the initial pain is felt in the right iliac fossa is extremely unlikely to be appendicitis. The later transference of pain to the right iliac fossa indicates extension of the irritation to the parietal peritoneum. The closer the appendix is situated to the parietal peritoneum of the right iliac fossa the earlier will the latter be irritated, and the sooner will pain be there localized. It must, however, be remembered that the appendix is sometimes placed deeply among the coils of small intestine or among the pelvic viscera, so that there may be no pain localized to the right iliac fossa at any stage, the initial "umbilical" area pain becoming steadily generalized. Absence of local pain may be, therefore, either a favourable sign, indicating that the infection is so slight as never to irritate the parietal peritoneum (and the appendicular origin of many of these cases is overlooked), or an unfavourable sign, indicating an appendix deeply placed among the viscera and therefore likely to cause diffuse peritonitis. When well-marked local pain appears in the right iliac fossa soon after the initial "umbilical" area pain one may confidently expect to find the appendix not far removed from the parietal peritoneum. These statements refer to first attacks only, for if as the result of previous attacks adhesions attach the appendix to the parietal peritoneum, the latter may become irritated almost from the very first and the pain be correspondingly early localized.

2. *Cutaneous Hyperalgesia.*

In the normal state impulses are constantly passing both in an afferent direction from the viscera to the spinal cord and efferently from the cord to the skin and muscles of the abdominal wall without our being aware of their existence. If a viscus becomes diseased the afferent impulses will naturally be of a more irritant nature, and the segment or segments of the cord receiving those impulses will be in a state of hyper-excitability. If a cutaneous nerve connected with one of these hyper-excitable segments receive a stimulus—such as a light pinch, which normally would have been quite insufficient to evoke any sense of pain, and which applied elsewhere

* Abstract of two post-graduate lectures delivered at the Manchester Royal Infirmary.

to the body would fail to do so—it is very probable that pain will be felt; that is, the area of skin pinched is said to be "hyperalgesic." Theoretically the whole cutaneous distribution of the hyperexcitable segment might be expected to be hyperalgesic, but in practice it is found that certain areas are especially susceptible. These have been well worked out by Mr. David Ligat, and are described in detail in his Hunterian Lecture;[1] by his kind permission I reproduce his diagram showing the "functional" areas where hyperalgesia is elicited in disease of the various viscera. His method of exciting the reflex response is to grasp the skin and subcutaneous tissue firmly between finger and thumb and draw them away from the deeper layers of the abdominal wall. "If an abnormal reflex is produced, it is at once recognized—the patient winces; he may even cry out if a sharp response is elicited." This method has the great advantage over other methods of applying the stimulus that no pressure is made upon the abdominal wall—rather the reverse—and hence there is no possibility of confusion with hyperalgesia of deeper structures—for example, the muscles and subperitoneal tissues. These hyperalgesic areas, while serving to indicate the organ at fault, yet are quite unaffected by the position of that organ in the abdominal cavity—for example, the "appendix" area of hyperalgesia is the same whether the viscus be, as usual, in the right iliac fossa or in one of the less frequent situations, such as the pelvis or the hepatic flexure, or even on the left side, since, wherever situated, it still remains connected with the same spinal segments. The presence of these hyperalgesic areas is, I believe, of very great value in determining the viscus primarily responsible, but no reliance whatever must be placed upon their absence as excluding disease of such viscus, and should the diagnosis of such disease seem probable upon other grounds, the absence of any hyperalgesia must be ignored. The *sudden disappearance* of hyperalgesia, after having been once definitely elicited—as, for instance, in acute appendicitis—is always a grave sign, indicating interruption of the reflex arc, as by thrombosis of the mesentery of the appendix or gangrene.

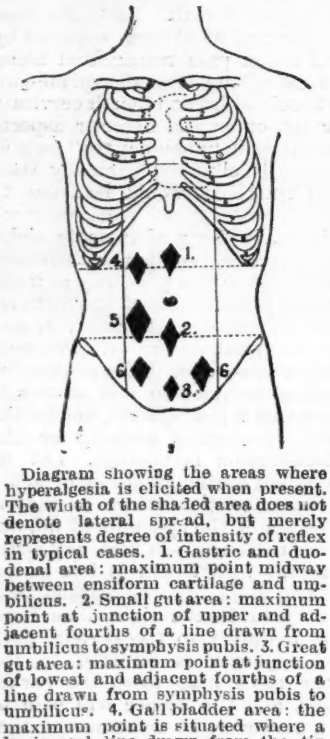

Diagram showing the areas where hyperalgesia is elicited when present. The width of the shaded area does not denote lateral spread, but merely represents degree of intensity of reflex in typical cases. 1. Gastric and duodenal area: maximum point midway between ensiform cartilage and umbilicus. 2. Small gut area: maximum point at junction of upper and adjacent fourths of a line drawn from umbilicus to symphysis pubis. 3. Great gut area: maximum point at junction of lowest and adjacent fourths of a line drawn from symphysis pubis to umbilicus. 4. Gall bladder area: the maximum point is situated where a horizontal line drawn from the tip of the tenth rib crosses a vertical line drawn midway between the nipple line and the middle line of the abdomen. 5. Appendix area: maximum point at junction of inner and middle thirds of a line drawn from the anterior superior spine to the umbilicus. 6. Fallopian tube area: maximum point at junction of lowest and adjacent fourths of a line drawn from the middle of Poupart's ligament to the umbilicus. (Reproduced by kind permission of Mr. David Ligat from his Hunterian Lecture, published in the *Lancet*, May 3rd, 1919.)

3. *Tenderness.*

Localized deep tenderness, which must be carefully differentiated from superficial cutaneous hyperalgesia, is always a valuable sign. The viscera themselves are quite insensitive to pressure or pain, so that when, in disease of a viscus, pain is elicited by pressure over any area of the abdominal wall such pain may be due to either (1) cutaneous hyperalgesia (a true viscero-sensory reflex), or (2) local parietal peritoneal irritation from stimulation of the subserous nerve plexus connected with the cerebro-spinal system (and therefore capable of accurate localization), and here there is no question of any reflex being concerned; it is not due to direct pressure upon the diseased viscus itself. Thus the pain elicited by deep pressure over "McBurney's" point in acute appendicitis, *and localized by the patient to the point pressed upon*, arises, not from direct pressure upon an inflamed appendix, but from pressure stimulation of the subserous nerve plexus rendered unduly irritable by extension to it of irritation from such appendix, no reflex being involved. Were it otherwise—that is, were the pain due to pressure stimulation of the inflamed appendix itself—then the stimuli, on reaching the spinal cord via the sympathetic, would be referred to the "umbilical" area, as already mentioned, and not to McBurney's point. I believe this is what actually does happen occasionally in cases met with in the very earliest stages of acute appendicitis, before the irritation has had time to extend to the subserous plexus, where, although the patient complains of pain when pressed over McBurney's point, yet, if carefully questioned, he will locate that pain to the region of the umbilicus.

Local tenderness is especially met with in the inflammatory group of abdominal crises—appendicitis, cholecystitis, salpingitis, and pancreatitis. The site of maximum tenderness is not alone sufficient to differentiate between these various conditions, since as already explained it merely indicates the site where the subserous nerve plexus is most acutely irritated by extension from the inflamed viscus. Thus local tenderness in the right iliac fossa may be due to the appendix, the right Fallopian tube, a low-lying gall bladder, or escaped contents from a perforation of the duodenum. In the differentiation between these valuable help may be derived from the detection of any of the hyperalgesic areas.

General abdominal tenderness, unless associated with muscular rigidity of the involuntary type, shortly to be described, is of no special importance. When so associated it usually indicates peritonitis.

At the risk of repetition I would emphasize the importance of a clear appreciation of the difference between the three signs already considered—pain (subjective), cutaneous hyperalgesia, and local deep tenderness, and would point out that in appendicitis they are manifested each in a different area—the subjective pain has reference to the "umbilical" area, the cutaneous hyperalgesia to the "appendix" area (see Ligat's diagram), and the local tenderness usually to McBurney's point.

4. *Vomiting.*

Like the pain, the vomiting which sets in at or soon after the onset of an acute abdominal crisis is a purely reflex phenomenon, and not, therefore, of any diagnostic value. Such reflex vomiting, however, usually subsides within twenty-four hours and does not tend to recur. A *recurrence* of vomiting after having definitely ceased for some time is always a grave sign, and usually indicates the onset of peritonitis. *Persistence* of vomiting from the onset is also of serious import, and should raise a strong suspicion of intestinal obstruction.

5. *Muscular Rigidity.*

Stimuli received from a diseased viscus by the spinal cord may irritate the motor cells of the same segments, and so cause a reflex contraction of the abdominal muscles supplied by those segments—the "viscero-motor" reflex of Mackenzie—rendering the abdominal wall in that area rigid. This is Nature's effort at protection, and is in every way analogous to the muscular spasm around a joint in a state of acute synovitis, fulfilling the same purpose—in fact, the peritoneum is the great visceral joint. The exact site and extent of the rigidity will depend upon the nerve connexions of the viscus primarily at fault with the spinal cord segments; but as it is always much more difficult to accurately map out areas of rigidity than areas of hyperalgesia, the viscero-sensory reflexes will be found to be of greater service than the viscero-motor in determining the primary focus of disease. Though the viscero-motor reflex may exist quite apart from peritoneal irritation, yet in the vast majority of acute abdominal crises peritoneal irritation is the exciting factor. Normally the peritoneum is moistened by a small amount of serous fluid to the presence of which it has become accustomed; any material alteration of the chemical constitution of this fluid will serve as an irritant and start a viscero-motor reflex. Mere increase in the amount of the fluid is not sufficient to do so—for example, the absence of

abdominal rigidity in simple ascites. Naturally, we may expect that the greater the chemical alteration the greater the consequent muscular contraction, and this we find to be the case. Thus the contraction is best marked where acid fluids are suddenly shot into the peritoneal cavity, as in rupture of gastric or duodenal ulcer. On one occasion I had the opportunity of examining the abdomen within two minutes of a perforation of a duodenal ulcer, and found the muscles intensely rigid even in that short time. Next in order come the contents of the intestine, then bile; urine, even though slightly acid, seems to be still less of an irritant. There is, however, one fluid that may be suddenly poured out even in large quantity into the peritoneum and yet prove so little of an irritant that it fails to start a viscero-motor reflex, and that fluid is blood. Almost identical in chemical composition with the normal peritoneal fluid, it does not act as an irritant. Hence we may find an entire absence of muscular rigidity overlying an extravasation of blood into the abdominal cavity, at any rate in its earlier stages. Later, as the blood clots, slight irritation may be set up, and some slight rigidity be detected. This absence of a viscero-motor reflex over an underlying intraperitoneal haemorrhage is an extremely important fact to bear in mind, and unless regard be paid to it it is easy for a large effusion of blood into the peritoneal cavity to be entirely overlooked.

Differentiation of Involuntary from Voluntary Muscular Rigidity.—A patient expecting pain from an examination of the abdomen, or an intentional malingerer, will often voluntarily contract the abdominal muscles and so simulate a viscero-motor reflex. Since voluntary muscular contraction is of no value in diagnosis, and depends upon the temperament of the individual patient, it is of the highest importance to distinguish it from the true involuntary rigidity of a viscero-motor reflex. The chief points of difference are: (1) gentle palpation for several minutes with the flat of a warm hand, with regular steady pressure, will cause voluntary rigidity to disappear or diminish; (2) distraction of the patient's attention by questioning him as to his symptoms, or directing his notice to some other part of his body, will cause voluntary rigidity to relax; (3) in voluntary contraction there is always a momentary relaxation of the muscles between the end of one expiration and the commencement of the succeeding inspiration, sometimes extending a little way into inspiration. *True involuntary muscular rigidity never relaxes, however gentle the examination, however one distracts the patient's attention, nor is any relaxation met with at any phase whatsoever of the respiratory movements.*

Defective Mobility.—Muscular rigidity may also be observed clinically as defective mobility during respiration, and it is always useful to commence an examination of the abdomen by asking the patient to take a few full breaths, carefully noting any defective movement of any part of the abdominal wall. It will usually be found that any area which does not move on respiration will, on palpation, present the features of involuntary muscular rigidity; the converse is not, however, always true, and I have seen cases where respiratory movement seemed perfect nevertheless show definite evidence of involuntary rigidity on palpation. Moreover, by simple inspection one cannot distinguish with the same facility as by palpation between voluntary and involuntary rigidity.

Involuntary muscular rigidity lasts as long as the peritoneal irritation causing it lasts, or until the muscles are previously exhausted, or the reflex arc sufficiently "dulled." Even morphine, which abolishes so many of the early reflex phenomena of an acute abdominal crisis, usually, and fortunately, fails to entirely abolish this. As to its clinical significance, I believe involuntary muscular rigidity to be an absolutely diagnostic sign of a serious underlying lesion, usually with some chemical irritation of the peritoneum, and therefore as the strongest single indication for surgical treatment that we possess; nor have I ever operated in the presence of this sign without finding such definite lesion present. Unfortunately the converse is not true, and serious changes may be going on within the abdominal cavity without any overlying muscular contraction. This is especially seen in cases of intra-abdominal haemorrhage, blood serum being, as just pointed out, insufficiently abnormal to the peritoneum to start a viscero-motor reflex.

6. *Distension of the Abdomen—Meteorism.*

That is, gas in the intestines as distinguished from free gas in the peritoneal cavity. This sign may be observed whenever the bowel is paralysed from any cause, but is especially seen in the groups of intestinal obstruction and peritonitis. A slight local meteorism is not necessarily of any serious import, but a *steadily progressive distension* of the bowels should raise a very strong suspicion of intestinal obstruction or spreading peritonitis.

7. *Free Gas in the Peritoneal Cavity.*

Free gas necessarily rises to the highest part of the abdominal cavity, and as the patient will usually be in the dorsal posture the gas will rise between the liver and the anterior abdominal wall and diaphragm, so leading to loss or diminution of the normal liver dullness. On the left side the splenic dullness will be similarly affected, but since the normal splenic dullness is a very inconstant quantity, its loss is thereby so discounted as to be useless for diagnosis. As a *positive* sign this loss of liver dullness is of great importance, provided there is no general distension of the bowels such as might force up the transverse colon between the liver and the diaphragm. As a *negative* sign it is valueless, and the presence of the normal liver dullness in no way excludes a perforation of the alimentary canal, since even in the presence of a perforation so insignificant an amount of gas may have escaped as not to materially affect the liver dullness. Especially valuable is the determination of the loss of liver dullness in a patient in whom, an hour or so before, its presence had been particularly noted.

8. *Free Fluid in the Peritoneal Cavity.*

Free fluid, shown clinically by the signs of "shifting dullness in the flanks," is not frequently observed in abdominal crises. It may, however, be seen (1) in large internal haemorrhages—for example, rupture of ectopic gestation; (2) after rupture of an organ containing much fluid—for example, distended bladder; and (3) after rupture of large cysts—for example, ovarian or hydatid. The most marked instance I have seen was in a case of perforated gastric ulcer, with large perforation of the lesser curvature; the patient, during a long journey from the country to the Manchester Royal Infirmary, had been supplied constantly with soda-water by sympathetic relatives to assuage a violent thirst.

9. *The Presence of a Definite Abdominal or Pelvic Swelling.*

This is of great diagnostic value, and is most frequently noted in the inflammatory group of abdominal crises—appendicitis, cholecystitis, and pelvic inflammations. Even when present its detection may be very difficult on account of overlying muscular rigidity, and a caution must be given not to use any forcible pressure in examining for it, as otherwise an appendicular abscess may readily be ruptured. A definite swelling may also be felt in some cases of intestinal obstruction, notoriously in intussusception, where its situation and shape are characteristic, and also in obstruction from malignant growths, from faecal masses, and occasionally from foreign bodies. In one case I was able to feel a large gall stone and in another a large hairball, both causing acute obstruction.

10. *Rectal Examination.*

This often throws light upon the diagnosis of an acute abdominal crisis, especially in the inflammatory and obstructive types. Inflamed appendices can sometimes be felt per rectum and appendicular abscesses recognized when the abdominal examination is quite negative. In obstruction from intussusception the invagination may be felt, malignant growths of the rectum causing obstruction can be detected; and, even when too highly situated in the colon for this, the peculiar "ballooning" of the bowel below them raises a strong suspicion of their presence, though this sign may occur also in peritonitis.

Having dealt with the individual symptoms and signs observed in acute abdominal crises, let us turn to a consideration of their arrangement in groups such as we meet with clinically. But, *before deciding in any given case presenting symptoms suggestive of an acute abdominal crisis that the cause is referable even to the abdomen at all*, there are two fallacies in particular which it is important should be borne in mind. These are: (*a*) The "crises"

met with in tabes dorsalis—"gastric," "intestinal," and "renal." It should be a cardinal rule to test the knee-jerks in every abdominal case. On the other hand, it must be realized that tabes does not preclude the co-existence of a true abdominal crisis, and, further, that the visceral analgesia which occurs in some tabetics and prevents the manifestation of pain, cutaneous hyperalgesia, tenderness, and rigidity, may render the recognition of such crisis a very difficult matter indeed. (*b*) The possibility of confusion between acute abdominal crises and acute intrathoracic diseases, especially acute basal pneumonia, acute diaphragmatic pleurisy, and acute pericarditis. This difficulty is sometimes a very real one, and surgeons of experience have not infrequently opened the abdomen only to find the peritoneal cavity normal and the lesion an intrathoracic one. Whenever acute *lobar* pneumonia follows within twenty-four or forty-eight hours of an "early appendicectomy," one cannot help but suspect that the pneumonia was the real cause of the abdominal symptoms and that the operation was unnecessary; when pneumonia is due to an operation, it is of the *lobular* or bronchopneumonic type. The lower six dorsal nerves before entering the anterior abdominal wall supply the posterior and lateral aspects of the lower half of the chest wall. In disease of the chest viscera, and especially in basal pneumonia and pleurisy, pain may be referred to the peripheral distribution of these nerves—that is, to some part of the mid-line of the anterior abdominal wall—just as it is in a true abdominal crisis. Confusion is particularly liable to arise in the case of young children, since they cannot assist us with a description of their symptoms, and since in them the physical signs of a pneumonia are sometimes delayed for twenty-four or even forty-eight hours. Thus, for instance, *in the early stages of an acute pneumonia in a child we may meet with any or all of the following:*

1. Acute pain referred to the mid-line of the anterior abdominal wall.
2. Tenderness on palpation of the abdomen.
3. Defective mobility of the abdominal wall on respiration.
4. Rigidity of the abdominal muscles.
5. Abdominal distension (from associated constipation).
6. Nausea, vomiting, and hiccough may all be present, as well as signs of severe collapse.

If, in addition, no physical signs have yet appeared in the lungs it must be admitted that the simulation of an acute abdominal crisis is a very exact one. The points to consider in making a differential diagnosis are: (*a*) The frequency of respiration is out of all proportion to the abdominal symptoms or to the pulse; the respirations may be 40 or 50 with a pulse of only 100. As a working rule, a pulse-respiration ratio of less than 3 to 1 favours an intrathoracic cause, of more than 3 to 1 an intra-abdominal cause. (*b*) The average temperature of an intrathoracic lesion is higher than an intra-abdominal one, so that a high temperature combined with a low pulse-respiration ratio strongly suggests an intrathoracic cause, as does the occurrence of a rigor or of herpes labialis. (*c*) The abdominal tenderness is more superficial, and deep pressure with the flat of the hand is not only tolerated but may give relief in an intrathoracic lesion. (*d*) Although intrathoracic inflammation may be associated with marked rigidity of the abdominal muscles, yet this partakes of the "voluntary" rather than the true "involuntary" type. In all the cases I have seen it has been possible to detect a momentary relaxation at the end of each expiration, such as does not occur with an intraperitoneal lesion. (*e*) The detection of the "hyperalgesic" areas referred to previously would suggest the abdominal viscus primarily at fault; these would be absent in intrathoracic disease, but, as already explained, are by no means necessarily present in intra-abdominal disease. (*f*) A rectal examination may assist; marked tenderness suggests a peritoneal cause. If a careful consideration of these points still leaves one undecided, then I believe an exploratory laparotomy should be at once undertaken, as being the lesser of two evils—dangerous delay and unnecessary operation.

GROUPS OF CASES.

Having, then, excluded these possible fallacies, and having decided that we are dealing with a true abdominal crisis, we have next to consider the possible causes of this condition. It is not my purpose now to inflict upon you a list of all the various causes of acute abdominal crises—their number is extremely large, and no one who did not possess the confidence born of youthful inexperience would attempt to devise any scheme by which they could all be recognized before either operation or *post mortem*. For my own guidance I am accustomed mentally to classify them into five groups, and although some of the rarer conditions do not fall exactly under any of such heads, yet I have found it a very convenient scheme to have in mind at the bedside. These groups are:

1. The colics.
2. The perforations.
3. The haemorrhages.
4. The inflammations.
5. The obstructions.

This order represents roughly their average suddenness of onset. We must remember that the *early symptoms in them all may be identical*, since they depend upon the same cause—a shock to the solar plexus, evidenced clinically by pain referred to the mid-line of the abdominal wall, vomiting, and shock. These symptoms have long been described collectively by Sir Frederick Treves under the term "peritonism," and are of no value in differential diagnosis, since they may be present whatever the nature or wherever the situation of the lesion, provided only that it be of sufficient intensity to stimulate the solar plexus, directly or indirectly. Moreover, *this initial stage of shock is usually a transient one*, and is followed by a period of reaction—a dangerous calm before a mighty renewal of the storm—during which all the general symptoms may completely disappear, and it may be extremely difficult to convince oneself, let alone the practitioner or patient, that a really serious lesion is actually in existence within the abdomen. This "dangerous period" has long been recognized in connexion with acute appendicitis, but, as pointed out by that super-teacher of clinical surgery Mr. Rutherford Morison,[2] its occurrence in other forms of abdominal emergencies is not so widely known. Morison describes three stages of an abdominal emergency—the "triple syndrome":

1. The stage of shock.
2. The stage of reaction.
3. The stage peculiar to each lesion.

If, as too often is the case, the onset of the stage of reaction be assisted and intensified by the indiscriminate exhibition of morphine, it may prove a very pitfall of diagnosis. I well remember seeing in consultation a lady who had been seized with a violent epigastric pain and who when seen half an hour afterwards by her medical attendant was in a state of profound collapse, nevertheless, after injection of one-quarter grain of morphine, make such a complete temporary recovery that she was sitting up when I saw her four hours later, laughingly protesting that there was nothing whatever the matter with her; the only sign unmasked by the morphine was rigidity of the recti of the "involuntary" type; immediate operation revealed a perforation high up on the lesser curvature of the stomach with considerable extravasation of gastric contents.

GROUP 1.—*The Colics.*

This group is characterized by (*a*) the extremely sudden onset of the pain, (*b*) its sudden cessation, (*c*) its tendency to recurrence. The pain is, moreover, referred to certain characteristic regions. In *biliary* colic it is felt in the epigastrium, radiating backwards to the angle of the right scapula, and occasionally, when the endings of the phrenic nerve are stimulated, to the tip of the right shoulder. In *renal* colic it is felt to commence in the loin and to shoot downwards towards the groin, inner aspect of the thigh, and the testicle; often definite tenderness of the testicle, which receives its nerve supply from the same spinal segments as the kidney, can be elicited, although there is no tenderness of the overlying scrotal skin, supplied from the sacral segments; exceedingly important is the association of the pain with some increased frequency of micturition, whilst the occasional coexistence of blood in the urine is diagnostic. In intestinal colic pain is felt all over the abdomen, especially in *lead* colic, where the pulse, during the pain, is usually retarded, vomiting and constipation are associated, and a blue line *in, not on*, the gums may be detected. Tenderness of the abdomen may be present, but

in many cases, especially of intestinal colic, the pain is very definitely relieved by pressure, such as never obtains in peritonitis. Muscular rigidity may occur, especially in biliary and renal colic, but I have never seen it present the unyielding character of true involuntary rigidity. Restlessness, although it gives no relief, is a marked feature of colic, but never occurs in a perforation.

GROUP 2.—*The Perforations.*

As a group this is characterized by (*a*) the very sudden onset of the pain, which is usually described as excruciating; (*b*) the severity of the initial shock, which may, however, soon pass off; (*c*) the marked development of true involuntary muscular rigidity from the very first; (*d*) there may be signs of free gas in the peritoneum. Of these (*c*) is the most important and demands immediate laparotomy. Some clue to the viscus perforated may be obtained from the area of most marked cutaneous hyperalgesia and from the previous history of the case—for example, of "indigestion," appendicitis, or typhoid, but time should not be wasted in this connexion, as the site of perforation can be discovered with certainty only at the operation.

GROUP 3.—*The Haemorrhages.*

Haemorrhage taking place into one of the mucous cavities of the abdominal viscera, if of such intensity as to constitute a "crisis," will probably soon show itself by escaping from one of the natural orifices and so be detected—for example, haemorrhage from the stomach, bowels, and uterus. It is haemorrhage occurring into the peritoneal cavity itself that is so likely to be overlooked and for the reason already stated—namely, that blood is not sufficiently irritating chemically to act as a stimulus to the peritoneum and thus start a viscero-muscular reflex, so that there is an entire absence of muscular rigidity. We have, in fact, to rely for diagnosis upon the supervention of the general signs of loss of blood, and if the blood is escaping but slowly, these may be late in appearing. Whenever, therefore, we meet with a history of sudden acute abdominal pain, with or without the other signs of "peritonism," and find a perfectly soft, supple, and undistended abdomen, we ought, although we can at once exclude the other groups of abdominal crises, to bear in mind the possibility of haemorrhage taking place into the peritoneal cavity. If in the course of a few hours we note a steadily rising pulse, with increasing pallor of the mucous membranes and of the fingernails, and restlessness, and the abdomen still remains quite soft, we may with confidence diagnose intraperitoneal haemorrhage. Apart from trauma the only frequent cause of this condition is rupture of an ectopic gestation, and this is often confused with rupture of a gastric ulcer—in fact, as my practice does not intentionally include gynaecology, all the cases I have been asked to see had been originally so diagnosed. Such an error will, however, never be made if attention be paid to the state of the abdominal muscles—in ruptured ectopic gestation involuntary muscular rigidity is entirely absent, in rupture of a gastic ulcer it is well marked. Moreover, a case of ruptured ectopic pregnancy will usually be found very restless, tossing herself about in a manner never seen in rupture of gastric ulcer, where all efforts are directed towards keeping the abdomen as still as possible. Again, nothing increases the frequency of the pulse so continuously as haemorrhage, and though in the initial shock of a gastric perforation there may be a rapid pulse yet this usually soon subsides, and rises again only as peritonitis develops.

GROUP 4.—*The Inflammations.*

The main characteristics of this group are: (*a*) The *onset* is less sudden than in the three groups already considered, and general symptoms of malaise may have preceded the crisis by a few days. The pain never reaches its greatest intensity in the first few moments, as in colic, perforation, and some forms of obstruction, but steadily rises to its maximum within a period which may be as long as several hours. Thus, a patient who, feeling perfectly well one minute, is in violent agony the next, is suffering from some other type of crisis than an abdominal inflammation, and a recollection of this point would have prevented many errors in the diagnosis of acute appendicitis from other crises; (*b*) this is the only group in which the *temperature* may be raised in the early stages, but the absence of any rise of temperature should not be allowed in any way to exclude, and should certainly never be waited for to complete, the diagnosis in a doubtful case; (*c*) there is detected early on some *definite local tenderness* (compare very carefully corresponding points on the two sides of the abdomen), from which as a centre the tenderness tends to spread: the tenderness may, as in pelvic appendicitis and salpingitis, be first found per rectum; (*d*) muscular rigidity of the involuntary type, absent at first, appears only when the parietal peritoneum is affected, and extends concurrently with the peritoneal irritation; (*e*) a *swelling* may be definitely palpable in the region of the appendix, the gall bladder, or to one or other side of the uterus in appendicitis, cholecystitis and salpingitis respectively, the three most frequent causes of acute inflammatory crises. This swelling, especially in appendicitis, is not, as is so often thought, the swollen inflamed viscus itself, but is due to the plastic adhesion of the omentum (so aptly termed the "abdominal policeman" by Mr. Rutherford Morison), intestine or other viscera to the viscus primarily inflamed. The *diagnosis between acute appendicitis and acute cholecystitis* is, in the very acute cases, possible only by attention to (1) their different areas of cutaneous hyperalgesia; (2) the site of the most marked local tenderness and muscular rigidity—a guide by no means infallible, since tenderness and swelling in the right iliac fossa may be due to a gall bladder situated unusually low, while the same under the right costal margin may result from an appendix which has failed to undergo its proper descent, and has remained in the vicinity of the hepatic flexure; (3) some assistance may be obtained from the previous medical history (either of gall stones or previous attacks of appendicitis) and from the greater frequency of appendicitis in the male sex and prior to middle life.

Another frequent confusion I have noted between these two conditions has occurred at a later stage when a well-marked swelling is present, and the question is between an appendicular abscess and an empyema of the gall bladder. With a low liver (Riedel's lobe) a distended gall bladder may be at or even below McBurney's point, and, conversely, with a congenitally high appendix an appendicular abscess may be felt well above it. The diagnosis can, however, usually be made by noting: (1) a distended gall bladder is rarely so fixed by adhesions that it fails to move downwards with inspiration; an appendicular abscess is unaffected by respiratory movements; (2) a distended gall bladder has a rounded edge below, an appendicular abscess has its rounded edge above; (3) there is an area of resonance between an appendicular swelling and the liver, but not so in the case of the gall bladder.

Acute appendicitis and acute salpingitis of the right side constitute another frequent source of diagnostic confusion. The points to be considered in their differentiation are (1) the characteristic order of onset of the symptoms in acute appendicitis, so well described by the late J. B. Murphy, is much less a feature of salpingitis; (2) the initial pain is referred to below the umbilicus in salpingitis; (3) the cutaneous hyperalgesia of salpingitis is most marked at a site well below that of appendicitis; (4) the previous history of vaginal discharge, pelvic troubles, etc., may assist.

GROUP 5.—*The Obstructions.*

It is in this group particularly that improvement in the results of surgical treatment is so urgently required. In the other groups—the perforations, haemorrhages, and inflammations—the results of operative treatment have been markedly improved in recent years, and, although advancements in surgical technique and after-treatment have undoubtedly played a considerable part, yet to the earlier recognition of their existence must the chief credit be awarded, permitting as it does the application of appropriate surgical treatment at an earlier stage than hitherto. Cases of intestinal obstruction, however, unless from some obvious external hernia, are still apt either to pass unrecognized or to be temporized with until the development of the textbook symptom of *faecal vomiting* has declared itself. When, at the great Day of Judgement, we are all called upon to answer for the consequences, immediate and remote, of our actions, a truly terrible indictment awaits him who first described, in a surgical textbook, faecal vomiting as a sign of intestinal obstruction; far rather ought it to be regarded as evidence of rapidly approaching

death; nor should it ever be waited for to complete the diagnosis in a doubtful case. It usually indicates such a profound degree of toxaemia that, unless the cause of the obstruction be an external hernia or some equally readily ascertainable intra-abdominal lesion, the patient is unable to withstand the additional shock of the operation and dies "poisoned." Were as careful attention paid to the early diagnosis of intestinal obstruction as is now expended upon that of the other, perhaps more dramatic, groups of abdominal catastrophes, the present truly appalling mortality of this condition would, I am convinced, be very speedily and very materially reduced.

The chief features characterizing this group are (1) *the persistence of the vomiting*, the early reflex vomiting passing without interruption into that of obstruction; (2) *the cessation of passage of flatus*—if in a case of suspected obstruction flatus fails to pass within a period of twenty-four hours in spite of repeated enemata the diagnosis of intestinal obstruction is established with practical certainty; (3) *progressive abdominal distension*, a most important sign, and always calling for surgical intervention. To wait until distension is general is to render the operation much more difficult, to make inevitable the escape of coils of bowel during its performance—a procedure calculated more than any other to increase the intensity of the shock—besides paralysing the bowels from overstretching and increasing the toxaemia. The absence of any involuntary muscular rigidity and of early localized tenderness are negative points of some value. I have found *auscultation* of the abdomen of great assistance, and with a little practice the sounds produced by the passage of fluid contents along dilated coils and through narrowed portions of gut may be readily recognized. Sometimes there are other signs to help us in special types of obstruction. Thus in intussusception we have the passage of blood and mucus from the rectum (even before this has occurred a finger passed per anum may be covered with blood on withdrawal), and the presence of a tumour of characteristic shape felt somewhere along the course of the colon, or per rectum; this tumour is most in evidence as the peristaltic wave passes along it, and may therefore be palpable only in a spasm of pain, when the voluntary contraction of the abdominal muscles during the child's cries tends to obscure it. However, as already mentioned, there is always, in voluntary rigidity, a momentary relaxation at the end of expiration, and this will allow of the tumour being felt.

Many cases of chronic intestinal obstruction end acutely and may be mistaken for primary acute obstruction; such can, however, usually be recognized by the presence of two features never found unless obstruction has been in existence for some considerable time: (1) The outlines of individual dilated coils may be seen beneath the abdominal wall, giving a "hill and vale" appearance, and (2) peristaltic waves may be observed passing along coils of distended bowel. In the normal state neither peristaltic waves nor the outlines of individual coils of bowel are ever visible through the abdominal walls, though rarely these phenomena may be seen beneath the thinned-out covering of large ventral herniae, in cases of wide divarication of the recti muscles, and also in extreme degrees of emaciation. Even in these instances, however, the coils observed are of normal size and not distended, and are not really exceptions to the rule that whenever we can see clearly the outlines of coils of *distended* intestine, together with a peristaltic wave passing along them, we can safely diagnose chronic obstruction, and the presence of these two features in a case whose symptoms otherwise suggest acute obstruction should lead to a recognition of its primarily chronic nature.

Time will not permit me to consider cases presenting the features of more than one of these five groups—a not uncommon combination being that of inflammation with obstruction—nor of the rarer types of acute crises which do not exactly fall into any of these groups, but perhaps I may be allowed to mention two not very uncommon emergencies of special interest — acute haemorrhagic pancreatitis and torsion of an ovarian pedicle. *Acute pancreatitis*, though it should strictly be classified with the inflammatory group, has such a sudden and severe onset that it simulates and is usually mistaken for either a perforation of the stomach or duodenum or else an acute obstruction high up in the jejunum. The severity of the symptoms is such as to call for immediate operation, but the actual diagnosis is not often made prior to laparotomy, when the blood-stained odourless effusion and the presence of minute areas of "fat-necrosis" in the omentum and mesentery at once direct attention to the pancreas. *Torsion of the pedicle of an ovarian tumour* is readily diagnosed if the existence of the tumour is previously known, sudden abdominal pain associated with sudden increase in size of the tumour being quite characteristic; where previously unsuspected the tumour can, as a rule, be felt either through the abdominal wall or per vaginam, at any rate in the early stages, and if of the right side is not uncommonly, in my experience, mistaken for appendicular abscess; but the size of the tumour is too large for an appendicular abscess to have attained in the given time. Later, when peritonitis of the plastic type has set in, the tumour is masked by the overlying muscular rigidity, but as this rigidity relaxes under anaesthesia it is always possible to recognize the condition prior to making the actual abdominal incision.

In conclusion, surgical technique has now reached such a high level of efficiency that further improvement therein cannot be relied upon to better the statistical results of the surgical treatment of acute abdominal crises—such can be obtained only by earlier diagnosis on the part of the general practitioner permitting the application of such treatment at an earlier stage. The time that has elapsed between the onset of the attack and the opening of the abdomen is the real deciding factor in the ultimate issue of the case—far more so than the skill of the individual surgeon. Do not expend too much time in making an exact and elaborate diagnosis: content yourself with recognizing that a grave lesion has occurred which is far more likely to recover if surgically treated. I believe I speak for all surgeons when I say that we infinitely prefer to meet in consultation the practitioner whose diagnosis, *made in the early hours* of the attack, is limited to "something gone seriously wrong in the belly," than he who, *forty-eight hours later*, can give us a cut-and-dried and possibly perfectly correct description of what an operation will reveal.

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A Clinical Lecture
ON
THE STUDY OF HEART DISEASE.*

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I TRUST that your time to-day will not be wasted in listening to the remarks that I am going to make upon such a general subject as the one I have chosen. It can hardly be called a lecture, for it is only an expression of some of the ideas that have passed through my mind during the years I have studied this subject, but I hope, nevertheless, that I may stimulate your interest.

Heart disease is to me the least special of diseases because the cardio-vascular system is essentially a mechanical apparatus for distributing blood throughout the body, and when it is damaged the circulation in important organs suffers, this injuring in turn their functions and producing symptoms which are not strictly cardiac, but yet take a part in the patient's illness, and often an important one. These symptoms may be hepatic or pulmonary, or renal, or alimentary, or nervous, or a combination of them. Thus a wide knowledge of general medicine becomes essential in order to understand, and treat with confidence, such patients. If we focus all our attention on the heart we shall overlook valuable indications of heart disease, and though alive to the changes in the heart itself, be unable to grasp the exact condition of the patient.

It is not to be supposed that the heart must not be carefully studied, but even in doing this we are liable to fall into the error of restricting this part of the investigation to one part—the valves, for example—instead of considering the organs as a whole. We can see this tendency

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if we glance at the evolution of the skilled study of heart affections. With the introduction of the stethoscope there necessarily followed a period in which the greatest attention was given to elucidating the various sounds, thrills, murmurs, and friction signs. Looking back we can recognize that much time and skill were devoted to nice distinctions, which, though excellent training in accuracy, were academic rather than practical, and one feels that sometimes larger issues were lost sight of in minor details. It is certainly possible to overdo the study of valvular affections, and by dwelling too much on the mechanical effects of valvular lesions, to lose sight of disease of the myocardium, and even more to arrive at a wrong interpretation of the very valvular conditions that we studied so rigidly. This I will illustrate from the combined lesion of aortic and mitral regurgitation. It is often said that in such cases the mitral regurgitation is due to a *relative* incompetence of the mitral value produced by the effects of the aortic disease on the left ventricle. When, however, we follow many of these cases from their commencement, we find that in rheumatic cases the mitral valve is frequently damaged *first* by endocarditis, and the aortic valve *later* by the same process. Thus there are two separate lesions, and the mitral one is not dependent upon the aortic.

You may perhaps consider this to be an excellent example of an academic distinction, but it is not so, for you will find in a long series of these combined lesions that they are results of a severe type of cardiac rheumatism and illustrate a tendency to a spread of the infection. And you will not be surprised to hear that a considerable number of these cases die at an early age of a progressive or malignant endocarditis. Many look upon this final result as due to a secondary infection, but I regard it as a local intensification of the original and lurking rheumatic infection.

Now if we can be led astray over valvular affections by concentrating our attention too closely on the mechanical aspect of heart disease, it is easily understood how far wrong we may go when we are dealing with the human complex, a patient. For example, obsessed by a murmur, we may exclude a child from all activities, when with ordinary care such a child can lead a full life; thus we create invalidism and cause needless alarm.

This error, among others, has led to a swing of the pendulum, and many of you are well acquainted with the writings and teaching of Sir James Mackenzie, who brought us new facts and thoughts on the myocardium, and was the forerunner of extensive studies with the polygraph and electrocardiograph. I think he underrated the knowledge we in London possessed of the myocardium, but the man with a blazing torch naturally looks in the direction of its light, and of his fine work we have no doubt. This new period has taught us a vast deal about disturbances of the heart rhythm, and with it we must always associate the name and work of Dr. Thomas Lewis in this country. The result—and a very valuable one—is that we are now far more balanced in our views upon the part taken by the various cardiac structures in heart disease.

I believe, nevertheless, that we shall soon enter upon another period in the history of heart affections, with the realization of the immense importance of *infection* in cardiac disease.

This will bring with it a greater breadth of vision; for no one can study the results of infection in one organ without at the same time considering its effect upon other organs. And two aspects of heart disease will be always before our minds—the first the state of the heart and patient during the active phase of infection, the second the same considerations when the infection has ceased its activity and left its scars. The first stage may be illustrated by a child with recurrent chorea and the early signs of mitral endocarditis, the second by this same child when a woman of 35 years in an adult hospital, mortally ill with advanced mitral stenosis.

Is Rheumatic Heart Disease Infective?

The realization of this conception of heart disease, however, cannot be complete until there is general agreement upon a burning problem in medicine, the importance of which I am anxious to impress upon you to-day. The problem is this: Is rheumatic heart disease infective? Here I feel that I must proceed with caution, and assure you that I do not intend to enter upon a lengthy digression upon the pathology of rheumatism. I do, however, want to point out that this question is not a matter of my views or someone else's views, but one of vital interest to medicine and the public. Twenty years ago Dr. Paine and I, discussing this problem, were convinced that sooner or later it would have to be faced, and we believed that it would be brought to the front, not over the cause of acute rheumatism, but over the causes of malignant endocarditis. We felt that the study of acute rheumatism required so much investigation of the most exacting kind that few would have the time and opportunity to undertake it, but that the study of malignant endocarditis was comparatively a simple matter. No one with any experience can fail to see and isolate the infective agent in the valves of a fungating endocarditis, and the fatality of the disease gives many opportunities for verification. It is interesting to find our forecast of twenty years ago has come true.

The problem has now come to the front, and the failure to agree upon its solution stands across the path of progress. It has been brought into prominence not over the question of acute rheumatism, but over a condition named, unfortunately in my opinion, "subacute bacterial endocarditis."

These three statements will put the position clearly before you:

1. Malignant endocarditis is undoubtedly infective in nature.
2. The most frequent antecedent of malignant endocarditis is rheumatism.
3. Rheumatic patients suffer very frequently from endocarditis.

Is, then, rheumatic endocarditis bacterial and cardiac rheumatism infective?

If it is infective, then I think no fact concerning the cardio-vascular system since Harvey discovered the circulation is of more importance to sufferers from heart disease. It introduces a new system of study of heart affections with its basis the study of heart disease in the young, for it is then that infective processes are most frequent and in their earliest phases. Upon this basis the evolution of heart disease in the adult will be gradually built.

These studies in childhood will be undertaken at a time when we have hopes of prevention rather than palliation. There will be search for a serological or other test for the presence of active rheumatism in the system, a discovery for which there is great need. There is promise of the possibility of finding some antidote to the toxins that injure the heart; and finally we shall be driven by it to recognize that an essential step in the treatment of heart disease is its prevention, which, if not complete, at any rate may do much to minimize recurrences of active disease. Our ideal will be to regard chronic valvular disease as a surgeon does a strangulated hernia, and with such an ideal even imperfectly realized there will be advance.

You may have noticed that in speaking of "subacute bacterial endocarditis" I said that I thought the term unfortunate. I think, at the present time, it is unfortunate, because it implies a non-bacterial endocarditis, for otherwise some such term as subacute progressive endocarditis would surely have been chosen. Now, is there a non-bacterial endocarditis? And, if so, what form of endocarditis is it, and what is its cause? What non-bacterial agent produces the inflammation, necrosis, and scarring that we meet with in all forms of endocarditis that I personally am acquainted with?

Upon the answer to these questions there is little clear information, but I must not overlook a statement made by a distinguished physician at Cambridge at the discussion on subacute bacterial endocarditis. It was to this effect:

> Whatever the essential nature of rheumatic fever—and as to this we are still much in the dark—it is generally agreed that the vegetations of the associated endocarditis are, as judged by our present methods of investigation, bacteria-free, as also is the patient's blood stream.

Now I have been told, when discussing rheumatic endocarditis, that I have been hammering at an open door, and that no one doubts that it is infective, or that rheumatism is the *cause* of the heart disease.

Yet, is that door open if it is "generally agreed" that the heart disease is "associated with" rheumatism, and that the endocarditis—and therefore presumably the myocarditis and pericarditis—are bacteria-free? If any meaning is to

be attached to words, I should say that the door is still tightly closed. At that meeting I put forward this counter-statement:

> The heart disease in rheumatism is *caused by* and not *associated with* the disease, and the endocarditis in its early stages is *not* bacteria-free.

Thus you see that in a discussion on a malignant form of endocarditis this essential question in the study of heart disease has come into prominence: Is the most common form of heart disease infective?

This question cannot now be ignored unless medical research in this country, in spite of all the brave words we have heard about it, is dying. I am convinced that the younger investigators will not let it drop, but will decide the point in the near future and earn the gratitude of all who believe in our position as a scientific nation, and of all who are lovers of children. Openings for fruitful research are not so many that such an obvious and vitally important question as this will be allowed to remain unsolved.

Leaving now the point in dispute, I am going to ask you for the rest of the lecture to accept rheumatic endocarditis as infective and as caused by acute rheumatism. The latter you may be more inclined to accept when I point out that in a recent analysis of 172 cases of acute rheumatism under 12 years of age, by Drs. Paterson, Spence, and myself, in 114 there was evidence of heart disease. This surely favours cause rather than association, for it was the most frequent of all the manifestations.

I do not ask you to accept the strepto-diplococcus as the cause of rheumatism, because that is not necessary for my purpose. I only ask you to accept the carditis as infective, and seeing how constant a disease acute rheumatism is, as due to one and not divers infections.

With rheumatic heart disease infective, you will realize how great a part infections take in these illnesses. We have, among others, scarlet fever, septic infections, diphtheria, pneumococcal infections, tuberculous, syphilitic, gonococcal, influenzal, meningococcal, and typhoidal infections, all implicated. When these infections attack the heart they produce there, as elsewhere, lesions which vary with the nature of the infection and the resistance of the tissues. These fall into three chief types: Local lesions may be produced in the valves and elsewhere with connective tissue changes, leucocytic infiltration and necrosis, and when recovery occurs the necrotic tissue is replaced by scar tissue. If the endocarditis heals, it is a simple endocarditis, and if it does not, a malignant endocarditis. Or the process, as in mitral stenosis, may be less acute but more obstinate, with the result that there is a slowly advancing scar formation. Or thirdly, it may be fulminating, the toxins destroying the vitality of the heart before local lesions of any moment have time to develop.

With few exceptions, of which acquired syphilis is the most notable, these infections are more frequent in childhood, and thus it comes about that in the adult we are more often dealing with the scars of former infections and with heart disease in an incurable stage.

Heart Disease in the Young the First Step in the Study of Heart Affections.

If, then, instead of basing our study of heart affections upon the conditions in the adult, we commenced with children, and if our books on the subject devoted their early chapters to a broad review of heart affections in the young, we should approach heart disease from a very different aspect to the present one, and I am convinced there would soon be a decided advance in our knowledge.

You may object that much heart disease of the degenerative type is not met with in the young, but in the adult and elderly. This is true, and is one of the important points in favour of this method of study, for, from a deeper knowledge of heart affections in early life, we should learn much as to the antecedents of these degenerative lesions, and as the years pass there would accumulate valuable evidence upon the possible part that disorders of the heart in childhood take in determining lesions later in life.

Consider for one moment the so-called soldier's heart, effort syndrome, or D.A.H., whichever term you prefer. You find this condition arising in boyhood, and you can get a shrewd idea of the kind of individual who is likely to develop such a condition in later life.

A high-strung schoolboy, who excels both in work and games, rather by virtue of his intense nerve energy than from a robust constitution, breaks down after some severe exertion at a time when possibly he is anxious to keep ahead in his form. Possibly he has had an influenzal attack or sore throat, or in these days has not been too generously fed. What happens? His heart becomes tumultuous, and he himself nervous and agitated, and his digestion faulty. He may have a fainting attack or be unable to exert himself without dyspnoea and complains of pain over his heart. His heart may or may not be dilated, but it is certainly unstable and irregular, and his nervous condition equally unreliable. Such a condition, the counterpart of what we see in the adult, is slow in getting well, liable to relapses and a cause of much anxiety.

We can learn and teach most of the fundamental principles from the study of heart disease in children. Take, for example, rheumatism. We can study valvular lesions, dilatation, and pericarditis. It is in children that we can realize how faulty a conception of heart disease we must get if we look upon endocarditis, myocarditis, and pericarditis, as separate entities. Mitral regurgitation, for example, as you know, is generally admitted as the least harmful valvular lesion, but we find there are cases in childhood which run a most disastrous course, because the myocardium has been simultaneously damaged. Again, pericarditis is looked upon, rightly enough, as a dangerous lesion. Yet in children again you will find cases in robust patients which run a quite favourable course, when a severe myocarditis with no pericarditis in a frail child will lead to a rapidly fatal end. Our study of these cases forces us to realize that we must not judge of cardiac lesions by their anatomical names, but by their results to the patients. If you wish to learn the true meaning of a virulent cardiac infection, you will see this in the young. What more striking examples of acute asystole of infective origin can be found than a deadly rheumatic carditis, or equally virulent diphtheria or influenzal poisoning? The clinical picture of acute asystole, with its livid pallor, gasping respiration, vomiting, restlessness, running pulse, slight oedema, and rapid hepatic enlargement, is one of the cardinal studies in heart disease. Again, we can observe the origin of multiple valvular lesions and trace the gradual ascendancy of the predominant one, be it aortic or mitral. We see also cases of primary cardiac rheumatism—a very important group—in which the whole weight of the infection falls on the heart, all other rheumatic symptoms being absent, or so fleeting as to elude observation. From these we learn how latent are the symptoms of early heart disease, and when you have once followed these cases, you can readily understand how adults with "subacute bacterial endocarditis" may continue at work for weeks and months until laid low by some sudden complication such as an embolus or acute renal complications. Then again there can be no doubt that we learn much from studying the very commencement of heart affections. For example, we find that though rheumatism is more frequent in girls, it is more fatal in boys, and we learn that the fatal group is one usually associated with tonsillitis, arthritis, and carditis. In girls, however, the type is more chronic and relapsing, and we reach in them to the origin of that most serious valvular lesion, mitral stenosis, and we find it is often associated with repeated attacks of chorea.

This association of repeated attacks of chorea and mitral stenosis affords us an excellent example of what may be gained by studying the heart disease as a part of the general infection of the body. One of the most important points, as you know, in the history of mitral stenosis is the advance of the scarring process and consequent progressive narrowing of the mitral opening. If the process stops with the opening still of a fair size, life will be prolonged, but if the contraction steadily advances, the time must come when the heart begins to fail from the strangulation of the blood stream at the mitral valve. It is most difficult to estimate whether the process in the valve is advancing, because it is so slow in its progress, but we learn a great deal as to the probabilities by shifting our attention to other rheumatic lesions, and in particular to chorea, because that is such an obvious symptom and so closely associated. If we study chorea, we shall very soon see how obstinate it is in some children, how insidious, how apt to recur, and from it we get a clear idea of the dogged obstinacy of the rheumatic infection. If rheumatism can haunt the brain as it does, we can readily understand how quietly and unobtrusively it can progress in the mitral valve. Whenever, then, a patient with mitral stenosis

shows signs of active rheumatism elsewhere, be it in the brain or joints or muscles, we must suspect an advance of the lesion in the valve, or a sapping of the strength of the myocardium. It is because I have convinced myself of this persistent character of the rheumatic infection in the young that I believe in the adult malignant endocarditis as being frequently of rheumatic origin, the local virulence in the valves intensifying with failure in the patient's general health.

There are in children a considerable number of cases in which rheumatism does not appear to injure the valves, but causes a dilatation from damage to the myocardium, and I believe that much may be learnt about "weak" hearts in adults by tracing the history of the child's heart, which has been thus damaged through the early years of adult life. We know that in children such cases are very obstinate, and liable to break down under stress, and that these children are often highly nervous—a factor of deep meaning in the history of cardiac affections.

We have also opportunities in children of studying the adult type of heart failure, for we see mitral cases with oedema, ascites, orthopnoea, pulmonary oedema, albuminuria, and hepatic enlargement. We also see anginal attacks and embolism.

There is, I think, no doubt that disturbances of rhythm take a much smaller part at this age than later in life, and this fact itself affords us hope that we may learn much from a comparative study of these points at various ages, particularly as in recent years considerable additions to our knowledge of these arrhythmias in the young have been made by various investigators.

If for a moment we transfer our attention to the adult, and if we have thoroughly mastered the pathology of infective heart disease in the young, we can see more clearly the explanation of many of the symptoms in the adult, and we are in a much better position to estimate the importance of occupation and other factors in the final defeat of a damaged heart. I am convinced also that if more attention is given to early heart disease we shall soon see organized efforts in this country for the protection of adolescents with damaged hearts, and the gradual disappearance of those sad cases in which, from ignorance or lack of assistance and opportunity, young people thus handicapped are thrown into employments which mean for them certain death within a short space of time. To quote one case:

> I had a boy under my care, badly damaged with aortic and mitral endocarditis, who, at the age of 14, had a terrible attack of pericarditis, from which recovery seemed almost impossible. He, however, did recover, and after many months got about again. He was a sensible boy, with good parents, and they got him work as a clerk. He is now 19, and has done steady work as a useful citizen, coming to report at the hospital every three months. I have not a shadow of doubt that if he had been put into a position requiring physical strain he would have been dead in six months or less. All the skilled nursing and care and money expended on him in hospitals would have been wasted, and the country would have received no return for his existence.

Is there any event in the history of heart disease more remarkable than the development of rheumatic nodules in children? Is there any better example of the truth that the student of heart disease must not keep his eyes glued to the heart? In themselves they are painless and of no practical importance, and yet they are signs of great danger. I give you some figures from the recent analysis I have already mentioned:

> In 172 cases of active rheumatism in children under 12 years, 33 developed these nodules; 12 of them died; 16 became permanent cardiac invalids; and all but 2 had severe organic disease.

What a valuable warning these lesions are to us to be not pessimistic, but very cautious in our prognosis in such cases!

I come now to my last and most important point. When we are studying heart disease in childhood we are dealing with it at a stage which holds out much greater hope than later in life. If we can do good then, it may well be permanent good. Failing this, if we can prevent advance of the infective processes, we know that with increasing years the infective phase becomes less frequent. In the case of rheumatism the incidence is most frequent between the seventh and ninth years, and then it begins to decline, though still far too rife through late childhood and adolescence.

I have no hesitation in saying, from the evidence of incontrovertible pathological facts, that in the adult much of our treatment must, in the nature of things, be entirely palliative. All the skill and science devoted to the perfection of cardiac tonics will never make them more than heart splints; and no drug, short of one that will replace scar by healthy tissue, will ever do more than support the heart.

It is to prevention that we are bound to turn—a task of much difficulty in the case of rheumatism, but with great possibilities which have not been thoroughly explored. There are isolated writings of great value, such as those of Sir Arthur Newsholme on the nature and relation of the disease, of Dr. Shrubsall pointing out the relation of the incidence to river courses in the London area, of Dr. F. Langmead on the throat and rheumatism in children of the school age, of Dr. C. Coombs on fatal heart disease in Bristol. These give us suggestive indications, but as yet no serious organized attempt has been made in this country to study the distribution of rheumatism in the young throughout the land, viewing the disease as an infection.

On one point there seems agreement: that the disease as we see it in our hospitals is infrequent in the well-to-do, and this points to careful systematic inquiry into housing and clothing and school influences. Of school influences we are learning more each year from the medical officers to the London County Council schools. I was once told by a doctor that wearing clogs in the wet season diminished the incidence of rheumatism in the schools where they were worn. Do not suppose that upon this evidence I am about to advocate that the Government provide free clogs for all scholars. I only mention it because it illustrates lines of inquiry which are practical, and which must end in our learning more facts about the natural history of the disease. The need for special arrangements for cases of early heart disease to have a long period of rest have been repeatedly spoken of, and in course of time I believe these arrangements will be forthcoming.

Why is chorea so frequent during school life in London? In one year we admitted 104 cases out of 172 of acute rheumatism! Would not a prolonged meteorological study of the disease help in warning us when to expect an outbreak of acute rheumatism if we had the organization needful? Do we know enough about the influence of dust and crowding as a factor in the causation of acute tonsillitis and rheumatism?

Is the general public sufficiently alive to the danger of this disease? Had the same energy been expended on acute rheumatism as has been on tuberculosis and venereal affections, I believe the study of heart disease would have already made substantial progress. We should not hear so often as we do wonder expressed at children suffering from rheumatism, or the belief that heart disease was an affection of adults, and that chorea was caused by fright. You may not be aware that there was less chorea at Great Ormond Street during the worst year of the air raids than in 1914, 1918, 1919, or 1920!

In conclusion, I have endeavoured to-day to put before you my belief that we shall soon enter upon a new stage in the history of heart disease, one of prevention based on its study in children.

I am not so blind as not to recognize that at the present time, borne down as we are by the aftermath of a great war, our first duty is to make life possible for the strong and healthy, for, with thousands of unemployed, no attempts of ours to prevent a disease can balance the evils produced by unemployment. One hopes that the rally will come, the country steady itself, and the vast burdens on the active and vigorous be gradually lightened, and then will come this country's time to make a determined effort to grapple with the problem of organic heart disease. Meanwhile we should have time to think out the organization in a spirit of moderation and plain sense, but not of fanaticism. If there is not light in this direction I am at a loss to see where to look in the present state of our knowledge of the treatment of heart disease.

THE Food Controller has appointed an Inter-Departmental Committee to consider the provisions of the Bread Acts and the Bread Order relating to the sale of bread by weight. The members of the Committee include Dr. A. C. Farquharson, M.P., and Dr. J. M. Hammill.

THE EFFECT OF PREGNANCY UPON THE SIZE AND WEIGHT OF SOME OF THE ORGANS OF THE BODY.

BY

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THE following observations have been made on the female albino rat. The animals were healthy, closely related, and bred in this laboratory. Young females of as near a size and weight as possible were selected from several litters and paired against one another, each experimental animal and its control being sisters from the same litter. Nine pairs were observed. The control animals were segregated, and the others placed with a healthy male. Towards the close of each pregnancy the pregnant animal and its control were killed by bleeding under an anaesthetic. The length of each animal from tip of nose to anus was measured, and the weight of the animal less its uterine contents recorded. The organs subsequently enumerated were dissected out and also weighed.

Individual differences between the lengths and weights of the paired animals occurred but were never excessive, and the remarkable similarity between the animals is brought out by the averages, which are identical in the pregnant and control animals. Thus the average length of each group was 165 mm., and the average weight 129 grams, the latter being the net weight after deduction of the weight of the uterus and its contents in the pregnant animal.

The occurrence of pregnancy has made no difference in the size and weight of the animal apart from the weight added by the uterine contents; in other words, the occurrence of pregnancy has not affected the growth of the animal either as regards size or weight. The rats, it may be noted, were well fed on a liberal allowance of bread and fresh milk and were kept in clean, well ventilated cages, allowing plenty of room for exercise. Each animal was healthy and in good condition when killed.

The heart, kidneys, liver, spleen, thymus, suprarenals, thyroids, and pituitary were carefully dissected out, freed from adherent tissue, and weighed on a good balance. The average figures for the control and pregnant animals are recorded in the following table. In the fourth column the percentage increase or decrease in weight of the organ of the pregnant animal as compared with that of the non-pregnant control is given.

Organ.	Average Normal.	Average Pregnant.	Percentage Change.
Heart	0.613 grm.	0.584 grm.	− 4.7
Kidneys	1.135 ,,	1 131 ,,	− 0.3
Liver	4.702 ,,	5.998 ,,	+27.5
Spleen	0 593 ,,	0.574 ,,	− 3.2
Thymus	0.172 ,,	0.083 ,,	−51.7
Suprarenals	0.033 ,,	0.037 ,,	+12.0
Thyroids	0.018 ,,	0 0162 ,,	−10.0
Pituitary	0.0082 ,,	0 C062 ,,	−24.0

The Heart.—Little change is noted in this organ as the result of pregnancy. In seven cases the heart of the pregnant animal is slightly lighter than that of the control; in the other two it is slightly heavier. The average figures show that the heart of the pregnant animal is 4.7 per cent. lighter than that of the normal control. The change is so small as to be practically negligible; it certainly does not warrant the statement that the heart enlarges during pregnancy.

The Kidneys.—The weights of the kidneys of the control and pregnant animals are almost identical, those of the latter averaging a little less than those of the control rats. In a previous investigation[2] it was found that the heart and kidneys are closely correlated in any change of weight. Thyroid feeding, for example, increases the weight of both organs in similar proportions. It does not appear that the kidneys are affected by the condition of pregnancy.

The Liver.—The size of the liver is notably increased by pregnancy. It is heavier in every pregnant animal than in its control, and the average figures give an increase in weight of 27.5 per cent. Part of this increase of weight may be vascular, but the animals were all bled before death and as much blood drained from the organs as possible. The livers of the pregnant animals were undoubtedly larger than those of the control animals, and there is hypertrophy of this organ during pregnancy. This is to be expected from the increased metabolism that takes place in this condition, and the figures show that the liver is the organ chiefly concerned in the increased metabolic activity.

The Spleen.—Great variations of size and weight occur in the spleen of apparently normal rats. The average weight in the pregnant animals is a little lower, 3.2 per cent., than that of the control rats. It cannot be said that pregnancy produces any striking change in the spleen. According to Jackson,[4] the spleen tends to be correlated with the liver and to vary in size directly with that organ. My experience does not confirm this statement, and there is certainly no such correlation between the spleen and liver in pregnancy.

The Thymus.—The change which this organ undergoes during pregnancy is a striking one. In all cases involution is hastened by pregnancy, and the thymus shows an average loss of 51.7 per cent. in the pregnant animals. The histological appearances are those of the involuted organ, and present a striking contrast to those of the thymus of the non-pregnant animal of the same age.

The Suprarenals.—These organs do not show much alteration, but are in most of the pregnant animals slightly heavier than in the controls. The average increase in size is 12 per cent., but this figure is helped by extra large suprarenals in two of the pregnant animals. There is, however, a distinct increase in the weight of the suprarenals in pregnancy. The same increase was noted by the author[3] in another series of animals, and it was found that during pregnancy there is a slight increase in the adrenalin content of the suprarenals.

The Thyroids.—Contrary to the generally accepted view, it is found that the thyroids of the pregnant animals are smaller and lighter than those of the control animals. In only one case were the thyroids of the pregnant rat heavier than those of its control. The average figures show that in the pregnant animals the thyroids are 10 per cent. lighter than those of the non-pregnant controls. Histologically the thyroids of both sets of animals were found to be of the actively secreting type, and no distinction could be made between them.

It is frequently stated that the human thyroid enlarges during pregnancy, and the same statement is sometimes made in textbooks of physiology.[5] Actual measurements in the human female cannot be undertaken, and where the enlargement is obvious one may well doubt whether the individual is really normal. It may not be safe to argue from the rat to man, but in the former it is evident that the occurrence of pregnancy does not lead to enlargement of the thyroids, but rather to a slight diminution in their size.

The Pituitary Body.—In every case the pituitary body of the pregnant rat is smaller than that of its control. In the series of rats examined there is an average loss of 24 per cent. by weight of the pituitary body of the pregnant animal. The change appears to be in the glandular lobe, which shows a great diminution of the granular eosinophil cells characteristic of the normal pituitary.

According to Erdheim and Stumme,[1] the human pituitary is enlarged during pregnancy, large neutrophil cells replacing the eosinophil. In the rat's pituitary the condition is rather one of a smaller gland in which the eosinophil granules are lacking.

CONCLUSIONS.

In the healthy albino rat the occurrence of pregnancy has little effect upon the length and weight of the body, excluding the increase of weight due to the uterus and its contents. The heart, kidneys, and spleen are little affected; there is certainly no enlargement of the heart in pregnancy.

The liver is greatly enlarged.

The thymus undergoes rapid involution and is much diminished in size.

The suprarenals are slightly hypertrophied.

The thyroids are diminished in size in pregnancy, and there is a notable diminution in the weight of the pituitary body, attended by histological changes in its glandular lobe.

The expenses incurred in these investigations have been defrayed by a grant from the Carnegie Trust.

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ACCORDING to the annual report of Dr. G. B. Dixon, tuberculosis officer for Birmingham, the notifications received during 1919 were 3,116, and the mortality rate was 1.28; both these figures are the lowest on record. With regard to the results of treatment, it is noted that of the 4,146 pulmonary cases notified during 1913, when a number of chronic and severe cases were registered for the first time, 44 per cent. have died, and the number still alive is 56 per cent., of whom 90 per cent. are doing full-time work.

THE RISKS AFTER OPERATION FOR TONSILS AND ADENOIDS IN OUTDOOR CLINICS.*

BY

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THE removal of tonsils and adenoids in children is, if we exclude dental extractions, the commonest surgical operation done under general anaesthesia; its benefits in thousands of cases each year are considerable and lasting, and its risks, if a very few ordinary precautions are observed, are inconsiderable. With the present congestion of hospital beds, many children who require this treatment would be denied it were not the practice of operating in the out-patient department maintained. The precautions taken at the Bristol Royal Infirmary, from which clinic I have obtained my figures, are as follows: The cases are carefully selected. No sickly child, no child from an "epidemic" district, no child living outside Bristol itself, is dealt with in the out-patient department. The parents are given printed instructions for use before and after operation. The essential preparation is that the child's stomach be empty; it is therefore ordered a fluid breakfast three hours before the operation. It is brought to the Infirmary in the middle of the morning, and the operation is performed by the assistant surgeon or under his immediate supervision. Gas or ethyl chloride is used; all instruments are sterilized by boiling. The child is inspected at 2 p.m. to make certain it is fit to be taken home. The parents are instructed that it must be well wrapped up, that it must not walk a step, and that it must be kept indoors for four days. Formalin lozenges are given, and the child is seen again on the fifth and twelfth days.

Everything, therefore, lies with the parents, who, in practically every case, are anxious to do all they can for the welfare of their offspring. The preparation for operation is simple, and almost always carried out, but in the after-treatment they are often really handicapped; and it is the after-treatment that tells. For the first forty-eight hours raw gaping wounds in the child's fauces invite the attack of bacteria. After that a barrier of granulation tissue exists which will repel all ordinary infection. Mr. Tilley,[1] who likes to keep patients at home for a week after operation, gives as the chief risk of the operation septic infection, which, he says, "is difficult to avoid in hospital practice, where patients often return to their homes within a few hours of the operation"; he records two cases of acute septic poisoning, one fatal, where the home conditions were insanitary.

With the permission of Dr. P. Watson-Williams I have analysed the results of all the cases dealt with at the Bristol Royal Infirmary out-patient clinic during 1919. For the purposes of comparison I have analysed also the last 100 consecutive cases dealt with as in-patients. In both cases only children between the ages of 3 and 15 are included. The in-patients comprise all those admitted because they did not appear robust, and a few cases in which submucous septal resection was done as well. Those cases in which, for example, an antral empyema was opened at the time of the operation have been omitted as being outside the class of minor operations. Otherwise the conditions are similar. The same surgeons operated, and many of the operations on in-patients were actually performed in the out-patient theatre. The only differences were in the in-patient series: (1) the anaesthetic was usually given by the honorary anaesthetist; (2) ether was sometimes given; (3) the children were kept in hospital for two or three days afterwards.

Table showing Number of Cases and Morbidity.

	100 In-patients, March, 1918, to June, 1920.	239 Out-patients, 1919.	
Definite morbidity — ...	1	7	2.9 %
Serious morbidity	0	3	1.3 %
Mortality	0	1	0.4 %
Total morbidity	1	11	4.6 %

Such occurrences as severe haemorrhage or collapse have not been included, as possibly they would be more emphasized in the notes of out-patients than those of in-patients. A few histories are appended to indicate the standards used:

Case 3,799 (in-patient).—Following the operation this child had acute suppurative otitis media; the left ear perforated, but healed subsequently; in-patient fifteen days. (Definite morbidity.)

Case 50,144 (out-patient).—This child had double acute otitis media, starting a few days after the operation. The left ear subsided but the right perforated and had not healed when last seen several months later. (Definite morbidity.)

Case 50,782 (out-patient).—The operation was performed on May 30th, 1919. On June 7th the child was admitted with acute mastoid infection; an immediate operation was performed, but meningitis was already marked, and death occurred on June 16th. (Our first fatality directly traced.)

Case 51,298 (out-patient).—The operation was performed on October 10th, 1919; acute mastoid infection occurred shortly afterwards, and Schwartze's operation was done on October 17th. The child was an in-patient four weeks and attended the out-patient department for other ten weeks. The hearing is permanently impaired. (Serious morbidity.)

Case 51,301 (out-patient).—The operation was performed on November 7th, 1919. On November 11th acute suppurative otitis media occurred; myringotomy was performed; bronchopneumonia followed, and pleural empyema required operation a fortnight later. The child went to the convalescent home three months after the first operation. (Serious morbidity.)

The figures in these tables speak for themselves; though the number of cases is small, nevertheless they afford an important index. The morbidity among children operated on in the out-patient department is over four times as great as among the in-patients. Although the point has been recognized for years, I should like to ask whether sufficient weight is given to it, and what, if any, variation in present practice is desirable.

REFERENCE.

[1] Tilley: *Diseases of Nose and Throat*, 1919, p. 323.

* A paper read before the Bristol Division of the British Medical Association.

THE DIAGNOSIS OF HYDATID DISEASE OF THE LUNG.

BY

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ALTHOUGH hydatid disease is, apparently, not so common in English clinical practice as it is in Australia, the following brief notes of my experiences of its manifestations in the lung may be of use to English readers.

Between 4 and 70 years is the age limit of my records. There is a noticeable reduction in the number over 50 years of age. Men suffer more than women, and those who dwell in the country more than those who dwell in towns. Australia, New Zealand, the Argentine, and the north-western shores of Europe are the countries most extensively infected. The date of infection has an important bearing on the diagnosis, but those who have once lived in an infected locality may, in doubtful lung affections, be suspect, as the disease may exist for years without symptoms. Constitutional disturbance is unusual, but when it occurs it is not characteristic. Urticaria and maculate rashes are complications, and they may recur year after year.

Blood changes are those common to other parasitic diseases, and consist of an eosinophilia and basophilia. Such changes, however, are not constant, and variations occur from hour to hour. The only well-established fact is that if eosinophilia exists before, it rapidly disappears after operation, and may reappear later to a still greater degree. As a matter of fact, I have rarely found the presence of eosinophilia of material assistance in the diagnosis of obscure cases, notwithstanding statements to the contrary. This problem is complicated because in New Zealand eosinophilia is a very common phenomenon.

There is a conflict of opinion in the literature available as to the value of the precipitin and complement fixation tests. Observations in Sydney, New South Wales, suggest that the results are unreliable, while those in New Zealand confirm this view, but observers in Buenos Aires claim

them to be useful helps in diagnosis. Here in Christchurch, New Zealand, no records on the point exist.

As for local changes, in its early stages a "healthy" cyst in the lung causes no irritation or pressure symptoms; indeed, it may quietly attain a large size without any warning to the patient or causing any displacement of the viscera. Symptoms due to mass effects are exceptional, but occur at times. Changes in and around the cyst generally cause the first symptoms, and may indicate (1) rupture into a bronchus, (2) haemorrhage into the lung, (3) pleurisy, (4) pneumonia, or (5) pneumothorax. Rupture into a bronchus may occur without any warning, or follow one or more attacks of haemorrhage or pneumonia.

The patient's story is characteristic. There is a sudden rush of salt-tasting watery fluid with a sense of intense suffocation. The fluid expectorated may be blood-stained or fragments of cyst wall or daughter cysts may be present in the excessive quantity of the fluid material discharged, or débris may suffocate the patient by the plugging of the glottis or other part of the respiratory tract.

The appearance of the fluid is characteristic; it does not coagulate on standing, while microscopically fragments of laminated cyst-wall or hooklets may be found, but in sterile cysts with macerated cyst-wall characteristic elements may be absent. Pus cells are usually absent at first. The first rush may be a pint or more in quantity, while cyst débris and fluid may be expectorated for weeks.

Lendon expresses the opinion that débris in the sputum may persist for long periods, even years, but I cannot agree with this, as I have found that though hooklets appear to resist maceration for a considerable time, the rapidity with which the cyst wall loses its characteristic appearance does not make this likely. I would suggest that the débris, if persisting long, is derived from a more recently ruptured cyst. The history after rupture appears to depend entirely on the degree of completeness of the drainage and on the presence or absence of infection of the resulting cavity.

Many cases recover without complications, others develop all the symptoms of a septic cavity. I believe it is impossible for a ruptured cyst to re-form. Cysts in the neighbourhood appear to grow more quickly after the rupture of an adjacent cyst, possibly as the result of relief of pressure, and there is always the possibility of the existence of other fully-developed cysts.

Haemorrhages may occur without other premonitory signs or symptoms and may be either profuse or scanty. Unless physical signs which contra-indicate tuberculous disease are present, there is nothing to distinguish such haemorrhage from that caused by the latter disease. A cyst situated at the apex may exactly simulate phthisis. The extent of the lesion, the history of perfect health prior to the bleeding, and the small degree of disturbance caused by a large area of disease often give a clue to the cause of the trouble. Extensive tuberculous disease is more often than not bilateral. Pneumonia is at times a complication. I find notes of this complication recorded in the histories of quite half the reported cases in the literature. It takes the form of recurrent attacks during quite a long period of years. Haemorrhages and pleurisy often occur also. It is evident from the records that the attacks so closely simulate acute pneumonia that they may be mistaken for this latter disease. I have examined a large number of temperature charts of such cases, and they all present the same typical characteristics. There is no crisis, the duration is variable, and there is a tendency for irregular rises after the initial fall of temperature. The early attacks most closely simulate pneumonia, while later attacks are less characteristic and the temperature is less irregular.

Though apparently the patient may have recovered and be able to work, the signs in the chest, as revealed by the radioscope, do not clear up or give the impression of a gradual advance to a climax till the whole of the lung has become dense and quite impermeable to the *x* rays.

Pleurisy with effusion, often purulent, may accompany the pneumonia. This is due to inflammation, and not to the mechanical effect of the cyst, while the displacement of the heart may be greater than can be accounted for by the amount of the fluid. This displacement is probably due to the fluid pressing on solid uncollapsed lung. The fluid is of inflammatory type. I can trace no relationship between the size of the cyst and the resulting consolidation. What may be called the final stage, reached by some cases when the cyst does not rupture, presents a clinical picture which is, I think, quite characteristic. This picture consists of a practically solid lung, with possibly a little effusion, an irregular pyrexia of varying intensity, sometimes extremely slight, and a healthy lung on the opposite side. If pleural pain and cough occur and harmonize with the diagnosis of a cyst in an otherwise healthy lung, the case is simplified. The patient is not, as a rule, ill, although he has a pain and cough.

If examined soon after the appearance of the symptoms there is usually a rub to be heard, possibly of unusual extent. There is a sharply defined area of dullness, tailing off into and surrounded by healthy lung. As the cyst is globular in form, it may extend to the anterior and posterior walls of the chest. The breath sounds are diminished in intensity over the area of dullness, but there are no signs of fluid unless the cyst is of great size, in which case, especially if situated at the base of the lung, it is frequently mistaken for a pleural effusion. If, however, the absence of heart displacement is noted, this mistake is not likely to occur. The surrounding lung is seldom healthy, and adventitious sounds may be heard on auscultation.

The radioscope demonstrates these cysts at a glance, while the chest wall is usually bulging and often tender to the touch. Pleural effusion rarely accompanies this condition, but is common in cases complicated by pneumonia.

I have never heard of a definite case of pneumothorax occurring as a complication of hydatid cyst, but I have seen a few cases which were not caused by obvious tuberculous disease, and which may possibly have been due to this cause. Cough may exist long before there is any suspicion of hydatid disease, and may be attributed to nasal, pharyngeal, or laryngeal catarrh, as the chest appears to be quite healthy. Expectoration prior to rupture is the exception, but occasionally a considerable amount of muco-purulent sputum is present. It is remarkable how scanty is the expectoration in pneumonic cases, but some emphysema due to cough may result.

Even a small cyst, $\frac{1}{2}$ in. to $\frac{3}{4}$ in. in diameter, is impervious to *x* rays, and has a curious mottled appearance. In otherwise healthy lungs definite cysts are easily seen, but they always appear to be of considerable size, two or more inches in diameter, even though they are actually of very small size. If the lung is consolidated or otherwise diseased the cyst may, when large, be entirely obscured. A lenticular outline is, however, very characteristic; in fact, *x* ray reports are always very helpful, either as a means of leading to a positive diagnosis, or of enabling the observer to exclude the condition.

In attempting a diagnosis, puncture is, as a rule, too dangerous a procedure to be warranted as a routine method. If, however, it is possible by *x* rays or other means to make reasonably sure of the presence of a cyst, or to be satisfied that a pneumonic area cannot contain a large one (that is to say, of sufficient size to contain a dangerous quantity of fluid), then I think puncture is justified. If a case is left untreated, the cyst invariably enlarges, the pneumonia spreads, and the site of the required puncture becomes more and more obscure. I can find no relationship between the size of the cyst and the extent of the consolidation, and it is quite conceivable that a small cyst may cause disproportionate damage.

There are two sources of fallacy in the diagnosis:

1. A degenerate cyst with contents too viscid to enter a needle.
2. A cyst so packed with daughter cysts as to yield only a few drops of fluid. But even these few drops may contain enough material to identify the disease.

CASES.

The following clinical records may be useful:

1. J. H. W., aged 48, farmer, admitted January 24th, 1919. Four years ago operated upon for appendicitis. Otherwise health good except for violent cough at times. Since an attack of influenza in 1912 had not been well. Chief complaint bad cough and vomiting during paroxysms; no sputum. Much loss of flesh, and was too weak to do his work. Sweated very much at nights; urine contained a slight trace of albumin and a very few pus cells. Many teeth carious. Physical examination revealed much loss of subcutaneous fat; muscles show clearly beneath the skin. Heart sounds normal, apex not extending to the nipple line. On the right side some slight dullness in the interlobular line lower than is usual in tuberculous disease. A few distant crepitations heard. Complains of pain when right side is percussed in the line of axilla over seventh and eighth

ribs the liver dullness seems to extend upwards into the axilla and the resistance to the fingers is increased. No definite change in the breath sounds beyond some lessening over the dull area. *X*-ray evidence showed a large cyst, about 4 to 5 inches in diameter, present in the axillary line, just above the diaphragm on the right side. A beautifully clear outline was shown and there was no possible doubt as to the nature of the disease. No blood cell changes. There was a shadow at the root of the lung of small size. The radiologist reported that this was due to inflammatory thickening around a bronchus. Operation revealed a degenerated cyst full of odourless pus and cyst débris. The patient has since developed phthisis.

2. F. F., aged 38, sailor, admitted May, 1914, with pleural effusion. He had a history of left-sided pneumonia and pleurisy for the last eighteen months. Complained of cough and increasing weakness. After aspiration there remained some dullness below third rib in front. The pleural fluid contained polynuclear cells. He was discharged at the end of three weeks relieved. Readmitted May, 1915. He had lost flesh, and had an irritating cough, relieved by lying on the left side. Movement on left side restricted. The heart was displaced to the right, 3 in. from mid-sternal line. There was fluid in the left pleura. There was evidence of consolidation of the lung in front, from the clavicle to the nipple line. Crepitations could be heard at the base of the left lung. The right lung was clear. The radiologist reported that the right lung was healthy throughout. The heart was displaced to right; the left lung was dense all over, lessening a little at apex and base and most dense in lower lobe. Later he reported a rounded deeper shadow, the maximum depth being in the position of the left nipple. June 2nd, lung still clear. Later in June it was found that the fluid in the pleura was purulent. A rib was resected and the pleura opened and a large quantity of hydatid material was discovered. When first admitted his temperature fluctuated between 101.8° and normal; later it remained normal till just before the operation, but was never so high as on admission. From time to time the sputum was blood-stained during a period of eighteen months or more. He had a positive Wassermann reaction, and the general opinion of the staff was that the lung was syphilitic. No eosinophilia was found in repeated examinations, and in spite of a normal temperature the physical signs did not improve. At the time he first came under my care I made a diagnosis of cyst, but I was unable to induce a surgeon to make a thorough exploration of his chest. It was only the subsequent occurrence of an empyema that led to an operation.

3. J. L., labourer, aged 42, admitted October 22nd, 1918, complaining of pain in lower right anterior chest, worse on taking a deep breath; he sought advice on this account. Temperature normal, lungs slightly emphysematous, heart normal as to position and sounds; general health always good—he was at work up to the day of admission. Cough very little. On examination no pleuritic rub was found. There was a circumscribed area of dullness in the lower right chest, with a slightly more resonant area between the lung and liver dullness in the anterior axillary line margin and extending upwards about four inches. The transition from dullness to resonance was sharp. Breath sounds over dull area weak, no adventitious sounds heard, and no bronchial breathing. *X* rays showed a clearly defined cyst occupying a large part of the lung, the radiologist estimating this as half the lung. No eosinophilia. Refused operation, as he did not consider it necessary; he is not inconvenienced at all.

Conclusions.

It will be apparent that hydatid cyst may simulate many lung diseases, and to discuss differential diagnosis in detail would be to discuss the character of almost every known disease of the thorax. Moreover, it is clear that a cyst so rarely gives rise to pressure symptoms that the diagnosis must depend on the history and *x*-ray evidence.

VOLVULUS OF THE SMALL INTESTINE FOLLOWING ILEO-COLOSTOMY.

BY

NORMAN DUGGAN, M.B., CH.B.VICT., F.R.C.S.ENG.,

WORCESTER.

THE following case seems worthy of record, owing to the comparative rarity of the condition, and the successful result of operation.

Mrs. G., aged 62, had for three years suffered from progressive loss of weight, increasing constipation, and frequent attacks of severe indigestion and abdominal pain. When first seen, in the autumn of 1919, she was leading a semi-invalid life, and looked very thin and ill. There were no definite signs of abdominal disease, but operation was advised in view of the possibility of cancer.

First Operation: Ileo-colostomy.

Laparotomy on December 7th, 1919, revealed no growth, but there was marked visceroptosis, and the colon was thin and atrophic. Ileo-colostomy was performed by lateral anastomosis of the closed and divided lower end of the ileum to the pelvic colon. The patient made a good recovery from the operation; the bowels acted freely, pain and indigestion were relieved, and in the spring of this year she was walking up to eight miles a day. A post-operative hernia was controlled efficiently by a Salt's corset-belt.

Second Operation (for Volvulus).

She remained in improved health till June 26th, 1920; on this day she was seized with sudden acute abdominal pain, which gradually became worse. When seen next day, the abdomen was slightly distended and tender, but not rigid; the tongue dry and furred, and the pulse feeble and irregular. She had passed some flatus, but no faeces. She was evidently suffering from obstruction, but her general condition was so bad that palliative measures were tried first. No result followed a large turpentine enema, and on the third day from the onset vomiting set in. Operation was then undertaken as a last resort, though her condition was desperate. Under open ether anaesthesia (given by my partner Dr. W. E. Moore Ede), preceded by morphine and atropine, two pints of saline were given intravenously, and the abdomen opened by a median incision below the umbilicus. A twisted mass of intestine, black and gangrenous, the size of a fetal head, was found in the pelvis. The peritoneal cavity contained a quantity of turbid fluid with a strong faecal odour.

The mass proved to be a volvulus of the lower end of the ileum caused by a short cord-like adhesion between two folds of mesentery. As the gut involved was already gangrenous, the intestine above and below was divided between clamps, and a wedge of mesentery resected, the whole specimen being thus removed without attempting to untwist the volvulus. Even so the gangrenous portion burst in the necessary handling and distributed its contents in the wound. The length of gut removed was two feet, and the volvulus had two complete revolutions on its axis. The cut ends of intestine were united by an end-to-end anastomosis, two layers of catgut sutures being used; the peritoneum was cleansed by dry swabbing, and the wound closed by through-and-through silkworm sutures.

Recovery.

The patient made an excellent recovery, shock being combated by the intravenous saline given before the operation, and by frequent rectal saline injections during the twenty-four hours after. In the second week some troublesome diarrhoea, with undigested food in the faeces, was arrested by the use of a mixture containing hydrochloric acid and malt extract. The wound suppurated slightly, but not so much as might have been expected after the gross soiling of the wound at the operation. There was never any sign of peritoneal infection.

The patient was up in a month, and able to walk two miles in six weeks from the date of operation. Since then her progress has been steady; she looks and feels well, is gaining weight, and the bowels act regularly without pain.

Strangulation of a coil of intestine, which, following an ileo-colostomy, has slipped through the gap between the mesentery of the ileum and that of the pelvic colon, is a well recognized accident; and all authorities therefore recommend that the gap be closed by a suture to prevent the occurrence of this form of internal hernia. This had been done at the first operation in the case now recorded, but when the acute obstruction occurred, it was thought that the suture had possibly given way.

Operation, however, showed that the gap remained closed, and that the condition was due to a volvulus. The adhesion giving rise to the volvulus was no doubt a sequel of the first operation—ileo-colostomy.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TRANSPOSITION OF VISCERA IN TWO MEMBERS OF ONE FAMILY.

TRANSPOSITION of viscera is a condition not often met with, and two cases of transposed viscera occurring in members of one family must be so rare that I think the following notes are worthy of publication.

When I was carrying out a medical inspection at a school in Somerset in November, 1919, a girl, aged 12, was presented for routine examination. Upon inspection of her chest, the cardiac impulse was visible just inside the right nipple line; percussion and auscultation showed that the heart was transposed. The abdomen was then examined, and it was found that the stomach, liver, and spleen were transposed also. The mother of the girl, who was present at the examination, then informed me that the girl's brother, aged 10, "had his heart on the wrong side." I examined this boy the next day, and found that in his case, too, the heart, stomach, liver, and spleen were transposed. Both children appeared to be quite healthy.

I also examined the father, mother, and a remaining child, a girl of 15, but in their cases there was no transposition of viscera.

The diagnosis in each case was confirmed by *x*-ray photographs taken by Dr. Norman Haig of Yeovil. I wish to express my thanks also to Dr. Savage, County Medical Officer of Health and Chief School Medical Officer, for permission to publish these cases.

S. L. BRIMBLECOMBE,
School Medical Inspector, Somerset County Council.

PREGNANCY AFTER LIGATURE OF FALLOPIAN TUBES.

IN the JOURNAL of August 14th, 1920, p. 244, Mr. A. Crook of Norwich writes of a case of pregnancy occurring after ligature of Fallopian tubes. There are quite a number of cases on record in which this occurred. I think these records may be found in most of the year-books of gynaecology and obstetrics.

Some years ago I operated on a woman for prolapsus uteri, performing amputation of the cervix, anterior colporrhaphy, extensive colpoperineorrhaphy, and suspension of the uterus, and ligatured both Fallopian tubes with silk. Eighteen months afterwards she appeared in my consultation room four months pregnant. I had told her she need not be afraid of becoming pregnant again. She took no precautions, whereas for nine years previously she had taken precautions with success. Ultimately a child weighing 14 lb. was born; the mother was torn to the uttermost and prolapse occurred worse than ever. I had to operate again; there was no sign of the silk, no evidence of stricture of the tubes, which both looked quite normal.

The reparative power of a mutilated tube is extraordinary, and now, when sterilization is demanded, I adopt only one method—namely, complete removal of the tubes and the greater portion of the uterine ostium. By doing so one is, in the first place, certain of sterilization, and, secondly, that there are at least no receptacles for infection.

A. NORMAN MCARTHUR, M.B., B.S.,
M.R.C.S., L.R.C.P., Senior Indoor Gynaecological Surgeon to St. Vincent's Hospital, Melbourne.

THE SUPERIORITY OF SODIUM ANTIMONY TARTRATE TO EMETINE IN BILHARZIA.

DR. S. J. D. ESSER'S letter in the JOURNAL for October 23rd, asking about the use of emetine in bilharziasis, induces me to record the following case. In it all recognized forms of treatment, including emetine, had been tried, and a cure (complete as far as one is able to say) was eventually effected by the intravenous injections of sodium antimony tartrate.

The patient was infected some fifteen years ago in South Africa, and the disease gave rise to the usual symptoms—haematuria, frequency of micturition, pains in the back and attacks of renal colic. Urotropine and other urinary antiseptics gave no permanent benefit, nor did vesical irrigations. Two courses of subcutaneous or intramuscular injections of emetine hydrochloride were given for amoebic dysentery which supervened, the one course in July, 1915, lasting a fortnight, and the other in March, 1916, lasting three weeks. On each occasion gr. ½ was given night and morning every day, making a total of gr. 14 in the first course and gr. 20 in the second course. The patient was kept in bed during the injections, and the symptoms improved for a short time, but no cure resulted. After a time the symptoms of bilharzia were as marked as ever.

Just previous to the commencement of the course of intravenous injections of sodium antimony tartrate the symptoms, chiefly pain, frequency, and the passing of large numbers of clots, were as severe as they had been since the infection was first noticed. The urine contained large quantities of albumin and blood, and numerous ova, which hatched out easily under appropriate conditions. Injections were given three times a week, beginning with gr. ½; the dose was increased by gr. ½ at each subsequent injection up to a maximum of gr. 2½, which was continued until the patient had had in all gr. 25. The ova hatched out until gr. 10 had been injected, but about this period some appeared "black and shrivelled" and would not hatch out. The number of ova which behaved thus increased as the injections proceeded, until all those coming away were sterile; at the same time the ova became very scanty and increasingly difficult to find. The blood and albumin decreased rapidly after each subsequent injection. Pain and frequency gradually disappeared, while the general health improved considerably. The urine now contains neither blood nor albumin, and the very few ova seen are all and always definitely sterile, granular, blackened, and shrivelled. The last injection was given on October 14th.

Although the time that has elapsed is insufficient to enable it to be said that the cure is permanent, the notes provide some definite evidence of the value of antimony as compared with emetine in this particular case.

In conclusion, I may state, being myself the patient referred to, that I should recommend treatment by antimony tartrate or sodium antimony tartrate intravenously to any fellow-sufferer from bilharzia, rather than emetine, confident that the latter is not likely to produce the same local and general improvement in health which I have experienced.

Regarding the dangers of the antimony tartrate injection, whilst it is undoubtedly necessary for the doctor who undertakes the injection to work with due regard to the fact that the injections are made into the blood stream, personally I experienced no inconvenience during the course of treatment, but in point of fact, owing to the exigencies of my profession, I carried on with my work as usual.

London, W.C.1. A. H. HARKNESS, M.R.C.S., L.R.C.P.

DISAPPEARANCE OF THE RADIAL PULSES DURING DEEP INSPIRATION.

THE following observation was made fortuitously during the routine examination of a patient, J. E. H., a male, aged 45, of broad thick-set type with square shoulders and a high barrel-shaped chest. With the observer's finger on the pulse the patient was asked to take a deep inspiration. At the height of inspiration the pulse wave disappeared momentarily from the wrist, to return on expiration. When a deep breath was taken and held at its height the pulse remained absent until the breath was let go. The pulse waves in the radial, brachial, and axillary arteries of both sides were affected; and the phenomenon occurred both in the standing and lying positions. The pulse in the carotids was unaffected, and the heart beat was unchanged save for slight respiratory arrhythmia. The cause was anatomical, and lay in compression of the subclavian artery between the first rib and clavicle at the height of inspiration. Owing to the conformation of the chest the space between these structures was greatly limited. A physical peculiarity of this kind may be a common occurrence. I have never observed it before, nor do I remember ever having heard it mentioned or seen it recorded.

Harrogate. W. EDGECOMBE, M.D., M.R.C.P., F.R.C.S.

Reports of Societies.

MALIGNANT DISEASE OF THE COLON.

A DISCUSSION on the surgical treatment of malignant disease of the colon, which Sir Berkeley Moynihan afterwards described as the most informing surgical discussion he had ever attended, took place at the Medical Society of London on December 6th, with the President, Sir WILLIAM HALE-WHITE, in the chair.

Sir BERKELEY MOYNIHAN, in opening, said that the inaugural symptoms of carcinoma of the colon were (1) pain, which was sometimes scarcely more than discomfort; (2) intestinal irregularity, taking generally the form of diarrhoea if the growth was in the right colon, and constipation if it was in the left, the reverse conditions being excessively rare; (3) change in the faeces, the presence of blood being important as distinguishing a carcinoma from diverticulitis; (4) anaemia, the type known as pernicious anaemia, and treated as such by the physician, being often traceable to growths either in stomach or colon, especially ascending colon; (5) palpable tumour, or, more often, the feeling of the heaped-up masses of faecal matter behind the growth. *X*-ray examination by means of the bismuth meal had proved misleading; a good deal of help was forthcoming, however, from barium enemata. The characteristics of in carcinoma of the rectum were the irregularity in outline as seen in the *x*-ray picture, the constancy in position, and the unalterability under manipulation or after the administration of antispasmodics. So far as pathological anatomy was concerned, growths in the colon were slow, long restricted to the intestinal wall, showed great reluctance to affect and great lethargy in affecting the glands,

and only rarely gave rise to general dissemination. As to surgical treatment, the whole matter might be summed up by saying that the surgical anatomy of the lymphatic system governed the surgery in carcinoma of the colon. A radical operation involved the removal of the growth widely, and the removal of all primary glands and as many secondary glands as were accessible. He believed that gangrene following upon wide excisions of the colon was due to bad technique and not to any deprivation of the vascular supplies. As for the anastomosis to reconstitute the alimentary canal, he did not fancy the end-to-side apposition, and it was ten years since he had performed it. End-to-end apposition was a good method in appropriate circumstances, and difficulties arising from the different calibre of the intestinal ends could be overcome. Side-to-side apposition had the great advantage of involving the apposition of surfaces which had a complete peritoneal investment, and this was his method of preference. Some were frightened by the experimental work which showed that in the animal there was a hold-up for days at the suture line. Clinical evidence showed that this did not occur in man.

Sir W. ARBUTHNOT LANE said that clinically cancer of the large bowel was not usually recognized until symptoms occurred which indicated a varying degree of obstruction. The treatment must vary with the locality and extent of the growth, the condition of the intestine at the time of operation, especially as regards accumulated contents, the vitality of the individual, the invasion of adjacent viscera or abdominal wall, the presence of secondary growths, the degree of intra-abdominal tension, the amount of fat present in the tissues, and the age and sex of the patient. One point of great importance was the rarity with which peritoneal adhesions formed subsequent to operation. A careful study of the causation and mechanics of stasis would indicate that colectomy, under favourable conditions, was the ideal procedure. He referred to its many advantages. One of these was that when a large quantity of material had been collected in the colon behind the obstruction the removal of this in its entirety freed the system from the deleterious effects of the poison it produced as well as from the mechanical difficulty. But the varying conditions which the large bowel presented made its treatment of the greatest interest to the surgeon. Perhaps nothing was so surprising as the remarkable benefit that would often follow in a case of irremovable cancer by an operation for the complete diversion of the faecal stream from it. Unless there was evidence of secondary growth in important organs, there was practically no limit to the field of operation. No operation need be considered too radical. On only one occasion had he excised the large bowel in its entirety; the patient lived some time, and died from secondary growths in the liver, not observed at the operation. If the growth was in the splenic flexure, unless the condition of the patient was such as to render resection easy and safe, he again counselled colectomy as the best procedure; if the cancer was in the vicinity of the last kink, and the condition of the growth and of the bowel was favourable to resection, that was probably the safest course; otherwise colectomy was again to be recommended.

Mr. GARNETT WRIGHT emphasized the importance of early diagnosis in these cases. He rarely saw a case of carcinoma of the colon unless it was in the stage of complete obstruction, when the treatment, of course, was complicated. Radiographic examination did not afford much help unless the case was fairly advanced; sigmoidoscopic examination was useful for growths low down in the colon; the other recourse was to exploratory laparotomy, which he recommended when there were suspicious symptoms. A two or three stage operation was much safer than any immediate resection, even though obstruction was not very marked.

Mr. LOCKHART-MUMMERY said that cancer of the colon was one of the least malignant forms of cancer in the alimentary tract, the slowest to spread to surrounding structures, and the one in which there was least danger of recurrence after removal. If it was to be successfully treated it was important that the surgeon should get the case at an early stage, before obstruction had occurred, if possible, and before there was palpable tumour. The most valuable diagnostic agent was the sigmoidoscope, and another important method, often neglected, was bimanual examination under an anaesthetic. He would not hesitate to advise exploratory laparotomy when there were suspicious symptoms and no confirmation was forthcoming by other methods. He insisted on the importance of not excluding tumour in the colon as a result of *x*-ray examination; the negative evidence of *x* rays was useless. The ideal method of operation was resection of the growth with immediate anastomosis, and the growth should be removed widely, with as much as possible of the lymphatic area in the neighbourhood. The bowel left behind should be long enough to permit of proper anastomosis, and the blood supply to the distant parts of the bowel must not be interfered with. He had always performed end to end anastomosis of recent years; the cutting of the bowel on the slope enabled one to get into proper junction the ends of the intestine when these were of different calibre. As for the three-stage operation, while this was not ideal in theory, it would be a mistake to condemn it in practice. The choice in many cases was not between immediate resection and the three-stage method, but between the three-stage method and doing nothing at all.

Mr. GREY TURNER, who brought with him some excellent pathological specimens, said that the present results of operation, so far as immediate mortality was concerned, were extremely good, and even the remote results were encouraging. It was very necessary, in the first place, to be aware of the baneful effects of obstruction. Out of his 112 cases 47 were operated on first for obstruction. If there was actual obstruction, a temporary drainage operation must first be done. In actual removal of the growth the importance of a thoroughly free exposure under the guidance of the eye must be insisted on. Nothing had added more to the ease with which operations were now carried out than the recognition of the principle of thorough mobilization of the intestine before any attempt to resect. The speaker discussed each of these points. He favoured the end-to-end rather than the lateral anastomosis. The latter was safe as a rule, but occasionally there were pouches which gave way.

Among his 112 cases, which included all sorts of emergency cases with different types of obstruction, there were 34 deaths. Of the 78 recoveries, the after-history of 67 was known; 26 died with some recurrent disease within five years of the operation, and 41 were alive or had died without recurrence up to a period of eleven years.

The thing to concentrate on was early diagnosis. A great many cases came to him far too late.

Mr. H. W. CARSON gave particulars of 111 cases which he had investigated, from which it appeared that growths in the right colon were much less liable than growths elsewhere to cause obstruction. The incidence of obstruction in these 111 cases was 53 per cent. A radical cure was only possible in 35 per cent. He believed that many lives would be prolonged if more exploratory laparotomies were done.

Dr. F. HERNAMAN-JOHNSON thought that the method of peritoneal inflation by oxygen and radiography of the contents might make possible the detection of differences of density without an opaque meal. He also referred to the ameliorative value of *x*-ray treatment in inoperable carcinoma.

Mr. JOCELYN SWAN had found a barium enema much more advantageous than the bismuth meal. Of methods of anastomosis, he thought the side-to-side method safest, and he saw no difficulty in performing it although it involved overlapping the bowel. Undoubtedly caecostomy ought to be done in all cases where obstruction was present. He would advise caecostomy in chronic obstruction at least three weeks before attempting radical operation.

Sir BERKELEY MOYNIHAN, in reply, said he looked forward to a time when such discussions would be held in gatherings of general practitioners which surgeons would attend, rather than in gatherings of surgeons which general practitioners attended. Unless some propaganda could be instituted among general practitioners, and even among the public, early diagnosis would not be possible. With regard to methods of examination, he had tried and discarded the method of inflating the peritoneal cavity with oxygen. As to the degree of surgical interference, the conditions that apparently made an operation impracticable, or nearly so, should not govern them too closely. Over and over again he had opened an abdomen and felt that the conditions were all but hopeless; nevertheless, by steady persistence in loosening and so on, the tumour came out satisfactorily, and he was able to

do a wide resection. There were very few growths in the colon that could not be removed, unless secondaries were present. They had got to the stage when the mere technique of the operation was almost as safe as it could be. So far as methods of doing anastomosis were concerned, he felt that there was more than one method, and that the fault, if any, lay in a wrong application of the method and not in the method itself. If a side-to-side anastomosis were done and a dangling end were left, it was a bad piece of work, as it was also in the case of an end-to-end anastomosis when the cut ends were deprived of vascular supply. Personally, he felt much safer when he did a side-to-side anastomosis than he did in the case of an end-to-end one, and, after all, in surgery a surgeon's feelings must sometimes be considered!

PROGRESS IN OBSTETRICS.

AT a meeting, held on November 12th, of the Section of Obstetrics and Gynaecology of the Royal Academy of Medicine in Ireland, the President, Dr. HASTINGS TWEEDY, delivered his inaugural address for the session on "Recent progress in obstetrics." Progress in obstetrics, he said, had advanced at a more rapid rate than in its kindred art, gynaecology. In 1904, when he became Master of the Rotunda Hospital, the principles of asepsis were as well understood as to-day; yet, by a series of changes, he was able to make the practice of asepsis more perfect, and to lower the septic mortality by 50 per cent., and the morbidity from 10 per cent. to 4 per cent. The discovery that haemorrhage might be poured into the abdomen rather than into the uterus, and the further observation that it might arise as a symptom of toxaemia, were findings of the first importance. Accidental haemorrhage when treated by the Dublin method was now no longer a serious menace. Out of 18,000 bed patients he had recorded 72 such haemorrhages with two deaths. These would have been saved by Caesarean section had his knowledge then been so complete as now. Evidence in favour of the vaginal plug was conclusive, yet few realized its mode of action, or had acquainted themselves with its proper application. In cases of ruptured uterus statistics showed that better results were obtained by plugging the rent with iodoform gauze.

The Dublin treatment of eclampsia had reduced the mortality to below 5 per cent. In his last series of 51 convulsive eclamptics there was but one death (from cerebral haemorrhage). Such success was only possible when treatment was carried out as a routine procedure in every case. There was no longer room for the suggestion that each case of eclampsia should be treated on its merits; so long as this occurred mortality must remain high. The starvation treatment had proved even more effective in the prevention than in the cure of eclampsia.

A few weeks ago he saw a lady on the verge of convulsions, yet after six days of absolute starvation her severe symptoms had almost passed. He then permitted half a pound of grapes to be eaten; a severe relapse ensued, necessitating a rapid emptying of the uterus.

All Dublin obstetricians were agreed as to the harmfulness of food. Starvation, if adopted in time, would also cure the other toxaemias, hyperemesis, pregnancy vomiting, salivation, and probably acute yellow atrophy.

The treatment of contracted pelvis had gained by the introduction of pubiotomy and lower segment Caesarean section as practised by Professor Munro Kerr. Those who could accurately measure the internal diameter now found that each diminution of half an inch in the conjugate of a flattened pelvis had its own indication for treatment.

For the first half-inch, normal delivery with forceps or version, according to complications; for the second half-inch, induction of premature labour or pubiotomy; for the third half-inch, lower segment section or induction of premature labour and pubiotomy; for the fourth half-inch and all lower conjugates, lower segment Caesarean section. Classical Caesarean section would in future be reserved for emergencies when speed was an important element. A dangerous operation, both in immediate and after results, it was performed much too frequently, and often cloaked an imperfect obstetrical knowledge.

Since the speaker last presided over the Section, fourteen years ago, a great change for the better had occurred in private practice. Three influences had combined to bring this about: (1) The popularity of the nursing home, (2) the introduction of scopolamine, and (3) the use of pituitary extract. Patients had a more uneventful convalescence in the home than in a private house, where basins, beds, etc., were rarely aseptic, help was insufficient and not always wise, the couch was unsuitable, light was indifferent, and surgical instruments were hard to preserve aseptically. It had further become possible to determine the date of labour with a certain amount of accuracy. Many women carried their infants over time, an obvious disadvantage; we could now in 50 per cent. of cases determine a full-term labour by a dose of castor oil given in the early morning, followed in an hour's time by 10 grains of quinine, and again followed in two hours' time by ½ c.cm. of pituitrin. The use of forceps was a troublesome, anxious, and far from safe operation in a private house. On the other hand, there was no objection against its use when the surroundings were aseptic, the light good, help ample, and all the other conditions favourable.

Sir WILLIAM SMYLY believed that accidental haemorrhage was akin to eclampsia. He was convinced of the efficacy of starvation in toxaemic cases.

Dr. FITZGIBBON endorsed most of what Dr. Tweedy had said, but objected to his fixed method of treating the various degrees of contracted pelvis. He was still in favour of classical Caesarean section, and considered that lower segment section was advisable only in cases such as those of toxaemia, where one must take subsequent pregnancies into account.

Dr. MADILL said that successful as was the Dublin method of treating the toxaemias, since they were still ignorant of the source and nature of the poison, their treatment could not be described as ideal. He regretted the absence from Dublin of a well-endowed obstetrical pathological laboratory which could compete in research on equal terms with Continental investigators.

Dr. SPENCER SHEILL was not in complete agreement with Dr. Tweedy regarding the relative advantages of a nursing home. He had tried the castor-oil and quinine method, but had never succeeded in inducing labour.

HOUR-GLASS STOMACH.

A JOINT meeting of the Manchester Medical Society with the members of the Liverpool Medical Institution was held at the Manchester University on November 17th, the President of the Society, Professor R. B. WILD, being in the chair.

Mr. THELWALL THOMAS dealt with a consecutive series of fifty cases of hour-glass deformity of the stomach operated upon within thirteen years. Of these, forty-six occurred in women, and four in men; the symptoms—chiefly pain and vomiting—extended over an average period of nine years. Haematemesis was rare, and only severe in one case; without radiographic examination diagnosis was impossible. Despite the very long history of symptoms suggesting ulceration, malignant disease had not supervened in a single case. It was impossible to foresee the type of operation that would prove necessary in any given case; the decision must be made after thorough examination of the stomach, front and back. It was important to use all available methods to combat shock in these emaciated semi-starved patients. Resort had been had to gastroplasty, gastro-gastrostomy, all the known varieties of gastro-enterostomy, and even to gastro-duodenostomy, as well as partial gastrectomy; no condition in the abdomen could call for such a diversity of operative procedures. In the present series there were seven deaths, including three from bronchopneumonia. All the remaining cases except three had been traced, and the reports had been highly satisfactory; in six only had there been slight residual complaints. The results had been good, irrespective of the type of operation, so long as the way through for food had been efficiently provided.

Dr. HILL ABRAM read a note on excess of normal cerebrospinal fluid, stating his view of what should be called excessive, and relating some cases. He suggested that excessive fluid might be (1) an expression of an infection of the choroid plexus in actual meningitis, or (2) due to toxaemic conditions in infective diseases.

Mr. MONSARRAT, in a communication entitled "Is cholecystectomy the normal operation in cholecystitis?" discussed the physiology and comparative anatomy of the gall bladder, and maintained that the view that it was designed to act as a reservoir for bile was still the only one

tenable; he pointed out, however, that owing to human dietetic habits the functional value of the organ in man was negligible. All infections of the biliary channels tended to persist in the gall bladder, owing to its anatomical structure as a narrow-necked diverticulum; recurrent symptoms after cholecystostomy were in most instances caused by such a persistence of infection. In cholecystectomy there was a smaller operative risk than in cholecystostomy, and whether the cholecystitis were acute or chronic removal of the gall bladder should be considered the normal procedure.

Mr. THURSTAN HOLLAND read a paper on the hour-glass stomach from the *x* ray point of view. This was based on 151 cases. His analysis showed the condition—when due to simple ulcer—to be common in women, rare in males. The chief points were this frequency in females, the difficulty of clinical diagnosis, and the relationship to malignant disease. In discussing the latter point it was considered that all the evidence obtained from an analysis of the cases, the *x*-ray findings, the operations performed—73 in number—and the after-history, went to show that the gastric ulcer was not commonly a predisposing cause of gastric carcinoma.

PURPURA.

AT a meeting of the Liverpool Medical Institution, held on November 25th, with Dr. J. E. GEMMELL, President, in the chair, Dr. STALLYBRASS read a paper on the significance of purpuric eruptions. He considered that without further pathological advances the present unsatisfactory classification of purpura could not be improved upon. The work of Ledingham and Bedson, Weil, and others, on the part played by the diminution or destruction of blood platelets in the production of "idiopathic purpura," was reviewed. The occurrence of haemorrhages into the skin and elsewhere in a variety of infective conditions was discussed and recent work on the causation of petechiae in cerebro-spinal fever and in typhus—such as the finding of meningococci and of rickettsia bodies in the endothelial cells of the arterioles—was described. In most other diseases the causation of the haemorrhages was not yet clear. He then compared cerebro-spinal fever, plague, and small pox, pointing out that in each of these there was an ascending series of cases, from the mildest to the most severe type of infection, the latter in all three diseases presenting similar symptoms—namely, absence of focal symptoms, the occurrence of purpuric eruptions, and in cerebro-spinal fever and plague, and probably also in small-pox, of a relatively high degree of bacteriaemia. He concluded that in infective diseases purpura usually pointed to a high degree of bacteriaemia; that the occurrence of groups of haemorrhagic cases when haemorrhage was not a normal symptom of the malady indicated exalted virulence of the organism; and that when increased infectivity was present in cases exhibiting purpura, it was the result of bacteriaemia or of other accidental circumstances, and not of any inherent change in the properties of the micro-organism—that was to say, so far as purpuric cases were concerned, increased virulence was not necessarily associated with increased infectivity of the individual micro-organism.

Mr. R. E. KELLY read a note on a case of so-called cardiospasm.

The patient was a man of 55 years of age. He had difficulty in swallowing and regurgitation of food for the past seventeen years. *X* rays showed a typical dilatation of the lower 8 inches of the oesophagus with the narrowing at the diaphragmatic opening. It was in such a position, however, that the ordinary bougies would not engage the opening, so recourse was made to Plummer's method, whereby a silk thread was used as a guide. The patient swallowed yards and yards of thread, until it traversed the whole length of the alimentary canal. With this as a guide, olive-headed bougies through which holes had been perforated were threaded on to the silk, and by graduated sizes the stricture was enlarged sufficiently to take a rubber dilating bag. This was distended with water until the patient had an opening big enough to swallow ordinary diet. Only one series of dilatations were employed, and the patient had had no recurrence of the symptoms in six months.

Mr. Kelly then briefly discussed the pathology of this rare but interesting condition.

Professor GLYNN and Dr. MATTHEWS reported the case of indigenous malignant malaria described by them in the BRITISH MEDICAL JOURNAL of November 27th, p. 811.

SERVICE PATIENTS IN ASYLUMS.

AT a meeting of the Medico-Psychological Association of Great Britain and Ireland, held on November 25th, under the presidency of Dr. W. F. MENZIES, a paper on the "Future of service patients in asylums" was read by Dr. W. ROBINSON. He gave an account of the unfortunate class of case whose mental alienation—stated and considered to be due to war service—had necessitated certification and prolonged detention in mental hospitals. The public only imperfectly appreciated the true factors in the causation of the mental alienation, the varieties of the psychosis, or the prognosis. From his experience in France he believed that a large proportion of the soldiers who manifested psychic disturbances were potential psychopaths before the war. Once in the army such people caused trouble. Patients suffering from insanity were invalided to England, to turn up at some hospital abroad with a recurrent attack. Cases of general paralysis were frequently encountered. In 1917–18, when more men for fighting were urgently needed, many who, up till then, had been performing simple duties, were drafted to fighting units; often the mental state was not considered, and the abnormal stress of training, perhaps of fighting too, yielded a further harvest of mental cases. Dr. Robinson gave an analysis of 140 cases under detention in a certain asylum.

Of 30 cases not exposed to actual shell fire, there was hereditary instability in 12 cases, mental instability in 23; 2 had previously been insane, 4 had been in civil prisons, in 10 the mental trouble had occurred at adolescence, alcoholic excess was present in 16, and 11 had syphilis. Among those who had had foreign service at the front there was hereditary instability in 24 and mental instability in 50.

The author divided the varieties of psychoses in these patients under the heads amentia and dementia. By the former term he meant the mental condition of patients with deficient neuronic development, and by dementia the condition of patients suffering from permanent psychic disability based upon neuronic degeneration; 75 of the cases were aments, 65 were dements. In the great majority of these cases the prognosis as to recovery he regarded as very bad.

In view of the suggested changes in legislation for the treatment of incipient cases and the probable discontent of relatives he thought the following points ought to be emphasized:

A large percentage of service patients had been sent to asylums only after prolonged treatment in military hospitals; these were not patients curable by suggestion, psycho-therapeutic conversations, hypnotism, or psycho-analysis. As a class the war-service patients had replaced the pre-war class of chronic asylum patients. Many of these patients would probably have been asylum patients sooner or later if there had been no war.

PSYCHIC SECRETION.

AT a meeting of the Royal Medico-Chirurgical Society of Glasgow, held in the Faculty Hall on November 19th, Professor E. P. CATHCART lectured upon psychic secretion: its relation to digestion. He began by referring to the causes of hunger and appetite, and showed that they were not synonymous terms. Psychic secretion, or the secretion produced by mental impressions, was correctly named, as it was mainly dependent upon memory. Observations which had been made upon human subjects had virtually substantiated Pavlov's findings in dogs. The so-called continuous secretion of gastric juice gave a fluid which chemically was different from appetite juice, which possessed a higher degree of acidity. Referring to what, clinically, is called hyperacidity, Dr. Cathcart considered that this was probably a misnomer, as human gastric juice might contain 0.5 per cent. of HCl without causing discomfort. An amount equivalent to 22 c.cm. of commercial HCl was secreted daily, and the quantity of pepsin secreted in twenty-four hours, 525 mg., would digest 1.5 kilos of coagulated egg albumen in three hours.

Professor Cathcart next discussed the effect of various factors on appetite juice—the appearance of the food, its smell, its taste and the influence of chewing, the sound of food cooking, the thought of food and its palatability or unpalatability. The effects of prejudice and emotion upon secretion were next considered, and the lecturer told of a soldier who, in course of anti-gas training, had to pass through a chamber of strong poison gas, and who was very much worried about it. In the test he inhaled some of the gas, and died four hours and ten minutes after his

last meal. The meal was found in the stomach exactly as eaten, without the slightest sign of digestion having taken place. In conclusion, Professor Cathcart referred to the difference between conditioned and unconditioned reflexes—the latter dependent upon some stimulus such as the sight of food, the former a reflex built up through time. As an example of the conditioned reflex, the lecturer described how, by lightly brushing a small area on a dog's shoulder at the same time as meat powder was given, after a time the mere brushing of that particular part of the shoulder was sufficient to cause a secretion of juice. The part played by environment was considered and its importance emphasized.

Reviews.

THE ETIOLOGY OF TUBERCULOSIS.

PROFESSOR CALMETTE, in his book on bacillary infection and tuberculosis in man and in animals,[1] has set a new standard of medical writing, and given us a work which will be of immense value to the clinician, scientist, and sociologist. Humble-minded readers may at first be overawed by the author's vast and precise knowledge of his subject, and may even shrink from embarking on the task of reading so learned a book. But Calmette's genius lies in some measure in his simplicity of expression and the plainness of his meaning. The manner in which he treats his theme is a pattern to be copied. The use he makes of comparative pathology and comparative medicine is new and wholly admirable. To follow him through these studies is to be made to think of a walk with Harvey through Richmond Park. The volume is divided into four parts. The first part, following a short historical introduction, deals with the biology of the tubercle bacillus and its behaviour as an infecting agent. Calmette's own researches and his knowledge of the work of others enable him to speak with authority on debated topics. The morphology, cultural characteristics, and chemical constitution of the bacillus are fully described. Chapter V is particularly interesting; it deals with the toxins of the bacillus, setting out in detail the chemical and biological properties of the various poisons which it yields. In this chapter the many tuberculins which have been offered to the public are reviewed and their therapeutic values critically appraised. The author's verdict is that the advantages claimed for them by their inventors are by no means always scientifically established. It appears that all other products owe their activities to the endotoxins and exotoxins contained in Koch's original tuberculin, and that scarcely any of them can advantageously replace Koch's preparation.

The formation and evolution of the actual tubercle is considered, and the conclusion is that in every case the tubercle is a lymphatic production. The fixed cells of the different organs in which it may develop play no active part in its histogenesis. The author constantly reiterates that tuberculosis is essentially a disease spread by lymphatic channels and harboured in lymphoid tissues.

Tuberculous bacillaemia is, he tells us, a common occurrence, especially in children, but frequently passes unrecognized. This form may be benign and abortive, and is likely to be mistaken for a protracted gastro-enteritis or for influenza. Enlargement of the spleen may suggest a diagnosis of typhoid fever. But convalescence is not straightforward, localized signs of tuberculosis are apt presently to supervene, and recovery, if it occurs, takes the form of a chronic latent tuberculosis. This bacillaemia itself is not primarily a true blood stream infection, but usually arises from some pre-existing focus in a gland. One most important fact has been established: that lymphatic glands which are apparently healthy may prove, when inoculated into susceptible animals, such as guinea-pigs, to contain living and virulent tubercle bacilli. The bacillus enters the system in the majority of instances by means of the polynuclear leucocyte, which engulfs the bacillus but cannot digest it because of its resistant fatty envelope. The infected leucocyte travels to a distance, succumbs to the toxins of the parasite, and becomes ultimately the prey of a large mononuclear cell of some endothelial lining: for it is one of the essential functions of these endothelial mononuclear cells to absorb and digest degenerate or dead cells. A little later the endothelial cell in turn succumbs to the poisons formed by the original bacillus and its offspring. Thus the "giant cell" arises, the first stage of the tuberculous lesion. At this stage the disease may remain dormant for many years. Such a process of transportation of the bacillus and its capacity for latency renders it useless, even if it were possible, to attempt afterwards to discover the exact portal of entry. Calmette regards the alimentary canal as the commonest entrance, although he admits the lung as an alternative but much less important route. The author states the clinical and experimental grounds for his conclusions. Indeed, one of the charms of this book is that if we do not like the author's conclusions, all the facts are laid before us so that we may form better, or at least different, ones. Infection through the conjunctiva is a pathway which Calmette believes to be not uncommon. Of pulmonary infection by inhalation he speaks with no uncertain voice. Experimentally, infection can be procured by inhalation, but it is only effected with difficulty if dry dust laden with bacilli is used. It is easier with liquid droplets, but the form of lesion set up is massive caseation, not discrete tubercles of the lung.

There is an almost universal belief at the present day that pulmonary tuberculosis is caused by inspiration of bacilli. Calmette maintains that the frequency of this mode of entry is greatly exaggerated, and that the mouth and digestive tract are the usual portals by which the bacilli make their way to the lymphatic system and ultimately to the lungs. The lungs, he points out, are the greatest network of blood capillaries and lymphatics in the body. No matter how the bacilli have entered the lymphatic or blood stream, it is in this pulmonary network that they are likely to be first brought to anchor; this, he thinks, accounts for the frequency with which pulmonary manifestations may be the first sign of localization. He holds that the majority of cases of tuberculosis, from earliest childhood to advanced old age, are due to intestinal infections which have left no sign in the glands at the portal of entry. Tubercle bacilli may pass through healthy digestive mucosa and leave no trace of their passage. Clinicians, says Calmette, are loath to accept this truth because of Cohnheim's so-called "law," the signature in the glands nearest the port of entry. Cohnheim's law is only true of massive infections.

Calmette points to the mass of experimental and clinical evidence showing that in all susceptible animals, including man, tuberculosis, particularly if it develops slowly, is the outcome of an infection which is originally lymphatic. Later it extends to the blood stream, but it has started from bacilli absorbed by the digestive tract, principally the buccal, pharyngeal, and intestinal mucosa. This is true, according to Calmette, of every variety of localization in glands, lungs, or elsewhere. Veterinary surgeons, he says, have long ago accepted this view. Why are physicians so obstinate? Why do they expect man to differ from animals in his behaviour towards the tuberculous contagion? Merely because they meet chiefly with pulmonary manifestations in practice. Nevertheless Calmette is careful to point out that "intestinal" infection is not synonymous with "alimentary" infection. The bacillus is not necessarily introduced into the digestive tract by means of contaminated food; the milk of tuberculous cows has a relatively feeble power of infecting man. Fresh bacilli from some human source find the readiest portal of entry in the digestive tract. The young are almost universally susceptible to tuberculous infection. Autopsies show that one-third of all infants dying under 2 years old are infected, and Landouzy's figures are quoted as being more remarkable still, for he concluded that 27.8 per cent. of all deaths in the first year of life and 26.8 per cent. in the second year are due to tuberculosis. In infants tuberculosis practically never exists without infection of the tracheo-bronchial glands; but this is not a primary pulmonary infection, it is the initial localization of a lymphatic absorption or accidental inoculation. Calmette regards a direct instillation of bacilli from a phthisical mother into her baby's eye as one method of infantile infection. The mother wipes away her baby's tears with a handkerchief moist with tuberculous sputum. Experiment in animals proves that conjunctival instillation is followed by successive enlargement of the cervical and then the

[1] *L'infection bacillaire et la Tuberculose chez l'homme et chez les animaux.* Par A. Calmette. Paris: Masson et Cie. 1920. (Sup. roy. 8vo, pp. 619; 25 plates, 31 figures. 55 francs net.)

tracheo-bronchial glands, and that secondarily to the latter one or more pulmonary lesions may be discovered. In early infancy resistance is low, massive infections are common, and recovery is rare. After the age of four resistance increases, and a capacity is developed for limiting the extension of tubercles by the formation of fibrous tissue. Therewith the disease tends to run an adult course. Calmette considers that children who are feebly infected may develop a sort of immunity which protects them against reinfection. Infantile tuberculosis is most commonly localized in the bronchial glands, lungs, spleen, liver, mesenteric glands, intestine, meninges and brain, kidneys, and cervical glands. It is not until later childhood that the skin, bones, and joints are attacked. The pathological anatomy in adults and old people differs from that in children, or in negroes brought to Europe, partly because in later life the cases are due to superinfection rather than primary infection, and partly because the lymphatic gland system changes after the third year, so that it offers a less favourable soil for the growth of the tubercle bacillus.

The evolution of the various localizations of the disease is described in clear simple terms and rendered graphic by many exquisite coloured illustrations. These chapters form the completest description of the clinical manifestations and the morbid anatomy of tuberculosis that could be desired. A wholly new idea is given of the frequency and importance of tuberculous bacillaemia. Thanks to improved methods (by culture and by animal inoculation) of recognizing the presence of tubercle bacilli in the blood stream, it is evident that a bacillaemia, more or less intermittent and more or less intense, is commoner than we were wont to realize. Yet this bacillaemia does not necessarily imply an increase in local lesions; the bacilli circulating in the blood may behave as inoffensive foreign bodies and may be eliminated by the normal excretory channels. Their presence in the blood gives little information of prognostic value.

A critical examination of the influence of heredity leads the author to the conclusion that there is no positive evidence that an infant can be procreated tuberculous by its father. Transplacental infection from the mother is possible in the human fetus after the third month, but it is probably very rare and of almost negligible importance. In fact, infants born of phthisical mothers may escape infection to the extent of 97 per cent. if removed to favourable conditions in the country. The grave danger is familial infection after birth, especially when the mother is phthisical. Even though children of tuberculous parents may have diminished resistance to the infection, they can certainly be protected by avoiding the opportunities of contagion. This the author regards as an important fact to be impressed upon the public at large.

The second part of the book is devoted to the study of experimental tuberculosis, of bacillary infection in domestic and wild animals, of the part played by the ingestion of the milk and flesh of tuberculous cows in human contamination, and, lastly, of the so-called paratuberculous bacilli in nature. The diagnostic use of tuberculin in cattle is fully described. An interesting section deals with the "doping" of tuberculous animals by dishonest owners who endeavour to defeat veterinary tests by giving repeated injections of tuberculin, designed to produce an artificial tolerance. Vallée has found a means of outdoing the "doper" and procuring reactions even in the most carefully "prepared" subjects.

On the question of the specific duality of human and bovine tuberculosis Calmette delivers what we venture to believe is final judgement. There is only one species of mammalian bacillus (*Bacillus tuberculosus mammiferum*). Adaptation of this bacillus to the organism of man or of cattle has produced a differentiation, which is by no means absolute, into two types with certain distinguishing characteristics. Generally speaking, the bovine type is less virulent to man than the human type. But although the bovine type is extremely rare in the chronic adult pulmonary tuberculosis of man, it is relatively common in glandular or acute infections in children. At the same time Calmette remarks that tuberculosis is very common in countries where bovine tuberculosis does not exist, and where children are never brought up on cow's milk.

In the third part of the book the processes of defence and methods of diagnosis are considered. Our knowledge of the cell reactions to tuberculous infection is still very imperfect in spite of the progress that has been made. Of the enzymes, *lipase* seems definitely to play some defensive part in digesting the resistant fatty envelope of the bacillus. Attempts to make use of this knowledge and increase the lipolytic ferments in the blood have not been encouraging. *Coagulins*, by favouring the formation of tubercles, possibly aid in the defensive processes. *Lysins* appear to sensitize the organism towards reinfection, as well as towards tuberculin and other bacillary toxins. The phenomena of agglutination have been carefully investigated, with hopes that have so far not been realized. Experiments have shown that there is no parallelism between the agglutinating power of the serum and immunity. *Precipitin* reactions cannot be relied upon for the diagnosis of infection. *Complement fixation* furnishes no useful prognostic or diagnostic indications. Wright's researches on the *opsonins* are discussed at some length; Calmette's verdict is that the phagocytic index is useless in prognosis, and of very slight value in diagnosis. The *cytology* of sero-fibrinous exudates and effusions, on the contrary, gives valuable diagnostic and, to some extent, prognostic information. Lymphocytosis is practically constant in the early stages of a tuberculous serous effusion, and in many cases serves to establish a diagnosis. Besides these reactions, the blood changes are described, and also the various ways by which tubercle bacilli are eliminated in the excretions.

Chapters dealing with the physiological action of tuberculins and their diagnostic application are followed by a discussion of the constitution, behaviour, and functions of tuberculous "antibodies." Calmette concludes that their elaboration indicates a progressive form of the disease, and their presence has a real value in diagnosis. They are more abundant in advanced than in early stages, so that their estimation from time to time is of prognostic significance. Cachexia and approaching death are heralded by their disappearance, coinciding with aggravation of clinical signs. It is undecided whether "antibodies" are essential factors in defence; they seem rather the indicators of cellular reactions. Certainly they do not neutralize tuberculin artificially injected. There is no relation between the antibodies in the serum and a reaction to tuberculin. The fourth and last part of the book is devoted to "immunity," whether natural or artificial. In it is summarized in masterly fashion every fragment of knowledge that can contribute to a crusade against tuberculosis. The final chapter sets forth the scientific fundamentals for the prevention of tuberculosis in communities at large. It remains for statesmen and sociologists to acquaint themselves with these fundamentals.

Professor Calmette has given us a book of such intrinsic merit that his world-wide reputation would be unnecessary to secure for it attention. Nor will the tragic circumstances of its completion at Lille during the years of German occupation lend to it so enduring a place in the annals of medicine as will the knowledge it enshrines.

RADIOGRAPHY IN ANATOMY.

AN atlas showing the systemic arteries radiographed after being injected with material opaque to the *x* rays has been compiled by Mr. H. C. ORRIN.[2] It is designed for the use of students of anatomy, and it shows the arteries precisely as they exist in the human body. A full-term fetus was used as the subject, and the main feature of the book is the reproduction of the different parts—upper and lower extremities, head and neck, thorax, heart, and so on—whilst at the end are a series of very beautiful stereoscopic radiographs. The author takes each part separately, marks each vessel with its name, and adds a complete description of each artery and its various branches. No mention is made of the method employed in making the injections or of the material used, but the results are very beautiful; the most minute branches and terminations and the various anastomoses are vividly portrayed. The author in his preface describes the work as original, and this no doubt to a certain extent it is, but it should be remembered that both on the Continent and in this country similar radiographs had been published as early as in 1897. An injected brain was shown to the Röntgen Society by

[2] *The X-Ray Atlas of the Systemic Arteries of the Body.* By H. C. Orrin, O.B.E., F.R.C.S.Ed. London: Baillière, Tindall, and Cox. 1920. (Demy 4to, pp. 100; 21 plates. 12s. 6d. net.)

Dr. Hedley in November, 1897; Mr. Glew published a radiograph of an injected infant in the *Archives of the Roentgen Ray* in August, 1899; whilst Mr. Fryatt of Melbourne, in the same journal in 1904, started a series showing the arteries in an adult and in a fetus by means of radiographs which do not lose anything by comparison with those in the book just published. There is no doubt that for teaching purposes, and for the study of anatomy, and as a reference book, Mr. Orrin's atlas will be valuable. It is well got up, the letterpress is clear and sufficient, and evidently no pains have been spared to make the numerous illustrations the best possible.

Professor H. VAQUEZ and Dr. E. BORDEL have made a prolonged and thorough *x*-ray examination of the appearances shown by the aortic arch and the vessels at the base of the heart, and have published the results in an interesting volume.[3] As the authors state, the illustrations are the main feature of their book, whilst the text chiefly serves to explain what these show. These illustrations are not from radiographs but from screen tracings, as it is considered that neither by ordinary radiography nor by tele radiography is a picture obtainable which is as exact in its measurements as that made by an orthodiagraph screen drawing. The first portion deals with the methods of examination in the various positions, stress being laid upon the importance of the exact angulation for the various semi-lateral positions; if comparisons are to be made these observations should always be made at exactly the same positions. There follows a very complete description of the normal aorta, with a detailed description of the exact orthodiagraphic technique. Then follow chapters on the aorta in advanced life, in aortitis, and in aneurysm; in the latter the appearances are contrasted with other morbid conditions which might lead to difficulties in diagnosis. The next chapter considers the branches arising from the aortic arch and aneurysms affecting them, the differential diagnosis in this case being from tumours arising in the neck and extending downwards to the mediastinum. Concluding chapters deal with the shadows cast by the pulmonary artery and the vena cava. There are in all 247 figures, and it is obvious, both from these and from the text, that the book is the result of a most methodical research carried on for a long period of time, and from observations made upon a very large number of cases. It should prove of value to all radiographers as an aid to the correct interpretation of the radiographic appearances in many cases which present considerable difficulties, and in which the accurate reading of the shadows seen is by no means an easy matter.

MIND AND WORK.

AT a time when everyone is more or less perplexed by the industrial situation, the publication of *Mind and Work*,[4] by Professor C. S. MYERS, is particularly opportune. The book is concerned with the application of psychological methods to the problems of industry, and no one who reads it can fail to be convinced that the present methods of dealing with these vital questions are, in the main, haphazard, primitive, and wasteful of human energies. It is impossible for any thoughtful person to study this little volume, with its wealth of facts and its atmosphere of scientific detachment, without feeling that he has perhaps allowed himself to form opinions based upon insufficient data, and that many of his views may be prejudices rather than reasoned conclusions.

The first chapter is devoted to "movement study," which is discussed from three aspects. The planning of the factory or business, including the arrangement of tools and materials; the division of work amongst skilled and unskilled employees; and the learning of the best movements in work—"motion study." The author furnishes results of considerable significance which have been obtained in industrial undertakings when they have been systematically organized under the above headings. The improvement observed was not only in the direction of increased output and reduction in the cost of production, but also in respect to larger wages, lessened fatigue, and increased contentment amongst the workers. The second chapter is concerned with the study of fatigue. The various theories are reviewed, the experimental methods of investigation indicated and described, and the advantageous effects of rest periods and reduced hours demonstrated. Consideration is next given to "selection study." Vocational psychology and personality tests undoubtedly furnish a field of great usefulness in the future, and their application to large bodies of recruits in the American army has abundantly demonstrated their practical utility and given an impetus to their wider use in civil life. As Professor Myers points out, vocational guidance for boys and girls on leaving school will do much to prevent the unsatisfactory careers and wasted lives consequent upon the adoption of pursuits for which they are unfitted and which offer no scope for special abilities.

The chapter dealing with the vexed question of restriction of output, a subject which is just now so prominently in the public mind, will be read with much interest. It is shown that output may be restricted by the employer or by the employee; and that either of them may restrict it deliberately or more or less unconsciously. The psychological factors which determine this attitude are excellently summarized, and it is clearly shown how serious is the economic wastage which results from a lack of harmony between the worker and employer, and from bad organization and out-of-date equipment. A chapter is devoted to systems of payment. This contains an impartial survey of the respective merits and limitations of the methods of payment by day rates, results, bonuses, profit sharing, and co-partnership. In this instance also the author indicates clearly how the attitude of the worker towards these various schemes is determined by fears and suspicions which his past experience has inevitably created. The book concludes with a general survey of the present state of industrial unrest, and the author suggests the directions in which readjustment would seem to be necessary if a satisfactory solution of the industrial problem is to be reached.

Throughout this book Professor Myers stresses the necessity for the co-operation of the worker himself in the future development of industrial psychology, and he is fully alive to the fact that the introduction of the psychologist into the factory has not always been a success. The trade unions and workers have been suspicious of this innovation. They have felt that it was an instrument introduced solely in the interests of the employer, and in many cases, especially in America, where industrial psychology has attained its greatest development, this suspicion would seem to have been justified. Such a reproach could not be levelled at the writer of this volume, as he develops conclusions which would certainly meet with considerable opposition on the part of the "extremist" employer. Those who place the welfare of the community as a whole above sectional interests will, however, probably find themselves in general agreement with the scientifically developed views expressed in this book.

A survey of this volume makes it evident that the application of psychological methods to industrial problems is a development from which much may be expected in the future. The function of industrial psychology is not the dictation of policy, but it supplies the most adequate methods of obtaining facts upon which alone a sound and unbiassed policy can be based. The industrial situation is too important to rely on "hit or miss" methods, and a scientific approach is urgently needed. We can cordially recommend this book, and feel that it has a wide sphere of usefulness.

DISEASES OF CHILDREN.

SINCE the last edition of his *Lectures on Diseases of Children*, published in 1913, Dr. ROBERT HUTCHISON[5] has revised the whole work, rewriting the lectures on infant feeding, congenital syphilis, and tuberculosis, and adding a chapter on fever of obscure origin. The lecture on congenital pyloric stenosis contains many interesting points: in the discussion of the much-debated pathogeny the view that continued spasm causes the hypertrophy is supported

[3] *Radiologie des vaisseaux de la base du cœur.* Par H. Vaquez, Professeur à la Faculté de Paris, et E. Bordel, Chef de Laboratoire à la Faculté de Médecine de Paris. Paris: J. B. Baillière et Fils. 1920. (Roy. 8vo, pp. 252; 247 figures. Fr. 25.)

[4] *Mind and Work.* By Charles S. Myers, M.A., M.D., Sc.D., F.R.S. London: University of London Press. 1920. (Pp. 204+xi; 8 illustrations. 6s. net.)

[5] *Lectures on Diseases of Children.* By Robert Hutchison, M.D., F.R.C.P. Fourth edition. London: Edward Arnold. 1920. (Demy 8vo, pp. 428; 69 figures, 9 diagrams. 21s. net.)

in opposition to the hypothesis of a congenital anomaly, on the grounds that the symptoms do not come on immediately after birth, and that the condition can be absolutely cured by medical treatment; though Dr. Hutchison still believes that no case is so severe that it may not recover under medical treatment, improvement is often so slow and surgical treatment has recently become so successful that if ten or twelve days of medical measures fail to bring about definite improvement, he advises Rammstedt's operation of splitting the pylorus down to the submucous coat. Written in a conversational style, these lectures contain the wise advice born of much experience; this is notably the case in the account of coeliac disease, which, originally described by Gee, was rediscovered as acholia by Cheadle, and also by Herter as intestinal infantilism. Writing on the treatment of chorea, Dr. Hutchison says that he has long given up any very active or heroic measures, and quotes Sir Thomas Barlow's remark that he would like to write a paper on "the diseases produced in the treatment of chorea." On the vexed question whether splenic anaemia of infancy is a secondary anaemia or a specific disease *sui generis* Dr. Hutchison takes the latter view, and insists that it is quite distinct from the chronic splenic anaemia of adults. The essentially practical character of the lectures is well shown by the numerous photographs illustrating mental deficiency, especially mongolism, and by the case histories in the new chapter on fever of obscure origin. Dr. Hutchison may safely be congratulated on the promise of continued success of these lectures.

NOTES ON BOOKS.

THE compilers of *The Dunlop Book*[6] state that they have compressed into it those things a motorist wants to know. And truly the information contained in its pages is most complete, even to directions for turning over its thin paper leaves. The book is divided into seven sections, of which the sixth is a well-arranged key index and the seventh a list of repairers on the loose-leaf system, so that it may be kept up to date. Each section is tabbed, and the alphabetical arrangement in the Concise Guide, Roadside Sketches, and Hotel sections makes reference easy. The first section is a concise guide to towns and localities in the British Isles, prefaced by lines from E. V. Lucas's *Cloud and Silver*. The letterpress, descriptive of points of interest in connexion with each town or village, is interspersed with charming pen drawings and with street plans of the larger towns. The second section consists of about 400 roadside sketches of ancient landmarks and historical structures. The series of excellent maps in section three are introduced by a quotation on roads from Sir A. Quiller Couch. The maps, drawn on a scale of twelve miles to the inch, are useful in giving a general view of the country when planning routes, but are not intended to take the place of the two miles to the inch map so necessary for actual touring. Contour lines and graded colouring are used for distinguishing at a glance the hilly country. The fourth section is extraordinarily varied in its contents. Architecture, fishing, the camera, ancient camps in Britain, and golf are dealt with; and there are notes for American and French visitors, addresses of embassies, legations, and consulates-general. The section concludes with a variety of useful general information for motorists. The fifth section consists of a list of hotels with their appointments to motoring bodies, telephone numbers and telegraphic addresses, and their garage accommodation. The book is excellently bound in leather with a flap and button to close it, is a very handsome production, and, notwithstanding its size, well worthy of a place in the luggage of the touring motorist.

Professor MUNRO KERR and Dr. JAMES HENDRY have published a second edition of the *Notes on Midwifery*,[7] which were previously issued by the former for private circulation among his students. Printed on one side of the page only, and bound in a soft cover, they are presumably intended to serve as the groundwork of a textbook and a class notebook combined; and as they are adequately illustrated by line drawings they are calculated to fulfil this end very satisfactorily. The teaching is eminently practical throughout. From their very nature these notes must be supplemented by fuller teaching by lecture or larger textbook, but they provide a useful summary of the whole subject, and will be appreciated by students reading for examinations, and by teachers who wish to glance over the headings and outlines of any particular subject. Within these limits the volume will be found most serviceable.

The eleventh edition of *White and Martin's Genito-urinary Surgery*,[8] by E. MARTIN, B. A. THOMAS, and S. W. MOORHEAD, has been so rapidly exhausted that it has been found necessary to produce a twelfth edition. A review of the eleventh edition appeared in this JOURNAL a year ago. Very little change has been made in the new edition. A few illustrations have been introduced and minor alterations and additions made to the text. Only one new section—on the subject of the prophylaxis of venereal disease—has been introduced. We are glad to note that what has always been a very marked defect of previous editions has been remedied—we refer to the index. Nothing is more annoying to the reader than to find that an index is incomplete and inaccurate, and the old index to White and Martin's textbook had a remarkable number of inaccuracies. The editors have been wise in resisting any temptation to increase the size of the work; it is already so well known that it is unnecessary to say anything further as to its merits as a textbook.

In *Food Supplies in Peace and War*,[9] Sir HENRY REW briefly discusses the problems of feeding that now confront the United Kingdom and the world. For some decades before 1914 food may be said to have been both cheap and stable in price. Our compulsory rationing during the war was accomplished, as Sir Henry says, "without serious difficulty owing largely to the good sense and public spirit displayed by the people generally." What of the future? Given settled social and political conditions, food production in Europe may be expected to be restored to its pre-war level in the course of two or three years. In Great Britain the increased production of food has been the object of much legislation since 1917. The effects of this legislation cannot yet be seen or prophesied; farmers are guaranteed minimum prices for wheat and oats, farm workers receive at least a minimum wage, the raising of farm rents is restricted, proper standards of cultivation may be enforced—there is power to evict the occupier and carry on the farm under Government control—and the compulsory acquisition of land for small holdings and farm colonies is legalized. Sir Henry Rew clearly hopes that all may work out for the best and render the agricultural life more prosperous and more attractive.

[6] *The Dunlop Book: The Motorist's Guide, Counsellor, and Friend.* Compiled by Ed. J. Burrow, Ed. R. Cross, and A. J. Wilson. Second edition. Published for The Dunlop Rubber Company, Ltd., by A. J. Wilson and Co., Ltd., 154, Clerkenwell Road, E.C. (Demy 4to, pp. 735; illustrated. £1 1s. net.)

[7] *Notes on Midwifery.* By J. M. Munro Kerr, M.D., and James Hendry, M.A., B.Sc., M.B. Second edition. Glasgow: Maclehose, Jackson, and Co. (Double cr. 8vo, pp. 156; illustrated. 10s. 6d. net.)

[8] *White and Martin's Genito-urinary Surgery and Venereal Diseases.* By E. Martin, A.M., M.D., F.A.C.S., B. A. Thomas, A.M., M.D., F.A.C.S., and S. W. Moorhead, M.D. Twelfth edition, revised. Philadelphia and London: J. B. Lippincott Co. 1920. (Med. 8vo, pp. 943; 21 plates, 424 figures. 35s. net.)

[9] *Food Supplies in Peace and War.* By Sir R. Henry Rew, K.C.B. London: Longmans, Green and Co. 1920. (Cr. 8vo, pp. vii + 183. 6s. 6d. net.)

APPLIANCES AND PREPARATIONS.

Electrical Aids for the Deaf.

SOME electrical aids for the deaf have been introduced by Mr. W. H. Pettifor, a telephone engineer, of 11, Victoria Street, Westminster. One appliance, called the "ossiphone," is designed for cases of obstructional deafness in which conduction of sound through bone is necessary. The set comprises transmitter, pocket battery, and receiver, connected by a flexible conductor. The transmitter may lie on the table in front of the speaker; it contains a sensitive aperiodic microphone, and when the sound waves strike on the diaphragm a current corresponding with them sets up vibrations in the diaphragm of the receiver. The receiver is of about the size and shape of a watch, and has a knob, which can be lightly pressed against the teeth or any part of the skull, preferably just behind the ear, whereupon vibrations are conveyed to the auditory nerves by bone conduction. Other electrical aids make provision on a like principle for various kinds and degrees of deafness by modifications of the construction of the transmitter and of the diameter and thickness of the receiver diaphragm. A testing set is fitted with a number of standardized microphones and receivers, so that the combination with which the voice is most articulate may be ascertained, and the power of the instrument is decided by minutely regulating the distance between the poles of an electro-magnet and the diaphragm of the receiver. With this test instrument a prescription can be written for any one of ninety combinations which is found to give the most suitable pitch, wave form, and sound volume in the individual case, and the instrument is built up accordingly. We have tested these instruments, and, so far as a person of normal hearing can judge, they bear out what is claimed for them.

MEDICAL CERTIFICATES AND UNEMPLOYMENT BENEFIT.

BY A MEMBER OF A COURT OF REFEREES.

THE Unemployment Insurance Act, 1920, which came into force on November 8th, has the effect of enlarging very considerably the number of persons who may claim unemployment benefit. Although the medical profession is more nearly concerned with national health insurance, doctors are in a position to assist very materially in the determination of claims made by those who are out of work.

The statutory conditions for the receipt of unemployment benefit by an insured contributor are set out in Section 7 (i) of the Act. He must show *inter alia* "that he is capable of and available for work, but unable to obtain suitable employment." By Section 8 (5) of the Act he is "disqualified for receiving unemployment benefit while he is in receipt of any sickness or disablement benefit or disablement allowance under the National Health Insurance Acts, 1911 to 1920. . . ." It follows that to succeed in his claim an applicant must in all cases show that he is capable of work; but that if he is in receipt of sickness benefit there is a presumption of incapacity.

Claims for benefit are determined, in the first instance, by the insurance officer, who has to decide whether the statutory conditions are fulfilled. If the insurance officer refuses a new claim, or comes to the conclusion that a person receiving the benefit should have his allowance stopped, the claimant may appeal to a court of referees. This court consists of an employer's representative, a workman's representative, and a chairman appointed by the Minister of Labour. From the court of referees an appeal lies to the umpire.

A large number of these appeals raise questions with which medical practitioners have no concern. Thus an applicant may have been dismissed for misconduct, or he may have left his employment voluntarily for no good reason; but very many cases necessitate the production of a medical certificate. For example, a man may throw up a job or refuse to take it because he is physically unfitted for it. Again, he may have been dismissed because of keeping bad time owing to ill health. While his condition may not be such as to justify his receiving sickness benefit, if he can show that he is capable of doing light work which he cannot obtain he may be entitled to unemployment benefit.

In furnishing certificates to such applicants the medical practitioner can render very material service to those who have to decide claims for out-of-work benefit. But to be of real value the certificate should cover the following points and provide answers to the following questions:

1. Is the applicant capable of work *of any kind?* If not, he should be receiving sickness benefit; and whether he is or not he cannot claim out-of-work benefit.
2. What work has the applicant been doing? It is very necessary to state, in the body of the certificate, the nature of the work which the applicant alleges he has been endeavouring to do, in order that the court of referees may be assured that the practitioner has had the materials before him upon which to form a judgement.
3. What work the applicant can do—for example, whether indoor or outdoor, manual or sedentary. Information on this point is also valuable, because, while many men who can do heavy work out of doors could also do light work, it is not every one who can do heavy work.
4. When did the applicant become incapable of working, and for how long did his incapacity last? This is important, because, if a man were to be wholly incapacitated, say, for three weeks, and were then to recover, he would not be entitled to benefit during the three weeks, but could claim as from the end of that period.

It is realized that the practitioner who is asked to give a certificate is often in a position of considerable difficulty. Applicants constantly appear before courts of referees who, although they have left their work or refused a job for reasons of health, have never, in fact, seen a doctor. In such a case it is usual to require the production of a certificate, and the doctor seeing the man for the first time may have to form an opinion as to what his physical condition was at some period more or less remote.

In such cases there appears to be only one course for the practitioner, and that is to state his opinion as to the kind of work which the applicant is capable of doing having regard to his general condition.

It has been observed that an appeal lies to the umpire from courts of referees. The decisions of the umpire are recorded by the Ministry of Labour. The following notes of a few of these decisions are of value as showing how much importance is attached to the medical certificate.

An applicant who was last employed as a labourer in engineering works stated that he had been compelled to give up his former occupation as an iron moulder as he had contracted phthisis, and that he had to leave his last employment owing to the smoke affecting his health. He produced a medical certificate that he was suffering from tuberculosis and was unable to work, and stated that his doctor had ordered him to find lighter employment out of doors. He had only worked for three months during the past year. In these circumstances a claim for benefit was disallowed on the ground that, as the applicant's state of health prevented him from working for more than three months out of the previous twelve months, he was incapable of work.

In another case an applicant left his work as a wagon painter on January 30th, because he was ill. He produced a medical certificate to the effect that he had been suffering from bronchitis since February 11th, and had been absent from work until February 22nd. It was held that the applicant must be regarded as being incapable of work until medical evidence showing that he was capable of work was produced.

Where an applicant who had been doing heavy work produced a certificate to the effect that he had been suffering from bronchitis and attending here (that is, at the doctor's dispensary) for the last four weeks, it was held that the claim should be disallowed until further evidence was adduced that he was capable of work.

In one case where an applicant produced a certificate stating that she was "not fit to do continuously heavy work," it was shown that she could have had full time employment at suitable work, and it was held that in these circumstances she was not entitled to benefit.

THE POETRY OF THE MICROCOSM.

IT is curious to reflect that, though there have been many medical poets and not a few medical poems, of which Garth's *Dispensary* might be cited as a prime example, so few poets or poems, whether medical or not, have dealt with the human body. The *Purple Island* of Phineas Fletcher is, perhaps, the exception that proves the rule. This curious work was first published in 1633, but written much earlier, as is proved by its allusions to the Elizabethan Earl of Essex.

"The name of the poem," says an old critic, "conjures up images of poetical and romantic beauty, such as we may suppose a youthful admirer and follower of Spenser to have drawn. A perusal of the work, however, dispels this illusion. The *Purple Island* of Fletcher is no sunny spot 'amid the melancholy main,' but is an elaborate and anatomical description of the body and mind of man. He begins with the veins, arteries, bones, and muscles of the human frame, picturing them as hills, dales, streams, and rivers, and describing with great minuteness their different meanderings, elevations, and appearances. It is admitted that the poet was well skilled in anatomy, and the first part of his work is a sort of lecture fitted for the dissecting room. Having in five cantos exhausted his physical phenomena, Fletcher proceeds to describe the complex nature and operations of the mind. Intellect is the prince of the Isle of Man, and he is furnished with eight counsellors—Fancy, Memory, the Common Sense, and five external senses. The Human Fortress, thus garrisoned, is assailed by the Vices, and a fierce contest ensues for the possession of the human soul. At length an angel interposes, and insures victory to the Virtues, the angel being King James I, on whom the poet condescended to heap this fulsome adulation."

Fletcher's long-protracted allegory was based upon the notion of the mystic philosophers that the human body is a miniature edition (microcosm) of the universe (macrocosm). The idea that the microcosm is a kind of abridgement of all that is admirable in the macrocosm is found in the writings of Paracelsus and the medical astrologers contemporary with Fletcher, and it has been further elaborated by the illuminati of the type of Jacob Boehm, Robert Fludd (*Utriusque Cosmi Historia*, 1617, and *De Supernaturali Microcosmi Historia*, 1619), Van Helmont, who places the soul in the stomach and the spleen (the "Duumvirate"), and the more recent Claude de Saint-Martin, who died in 1803, and in 1782 published the gist of his "spiritualisme pur" in his work *Rapports entre Dieu, l'Homme, et l'Univers*. The *Leviathan* of Hobbes runs parallel with these writers' works, the state therein being represented as a kind of microcosm, analogous to the human body, and the Hobbesian idea recurs in Mr. Morley Roberts's recent *Warfare in the Human Body*, where the human economy is likened to that of the nation or state. Such analogies are perilous, and may lead to much false reasoning by political doctrinaires of communistic tendency. The poet, however, may insist on analogy where the politician or the pathologist

may not, and it is, therefore, the more remarkable that he has through the centuries paid so little attention to the microcosm and its implications. After the *Purple Island* we search in vain for allusions to the brain and human frame in the older anthologies of classic English poetry. The late seventeenth and early eighteenth century poets found their inspiration elsewhere than in the anatomical field, and it is not till we come to the time of John Wesley that we find him singing—on the verge of bathos:

Ah! lovely appearance of death.
What sight upon earth is so fair!
Not all the gay pageants that breathe
Can with a dead body compare!
With solemn delight I survey
The corpse when the spirit has fled,
In love with the beautiful clay
And longing to lie in its stead.

Thus the hymnologist and religious reformer. Far more nobly, but with similar inspiration, Lord Byron sang in the "Giaour":

He who hath bent him o'er the dead
Ere the first day of death is fled,
The first dark day of nothingness,
The last of danger and distress
(Before Decay's effacing fingers
Have swept the lines where beauty lingers),
And mark'd the mild angelic air,
The rapture of repose that's there,
The fix'd yet tender traits that streak
The languor of the placid cheek,
And—but for that sad shrouded eye,
That fires not, wins not, weeps not, now,
And but for that chill, changeless brow,
Where cold Obstruction's apathy
Appals the gazing mourner's heart,
As if to him he could impart
The doom he dreads, yet dwells upon;
Yes, but for these, and these alone,
Some moments, ay, one treacherous hour,
He still might doubt the tyrant's power;
So fair, so calm, so softly seal'd,
The first, last look by death reveal'd!

"I trust that few of my readers," adds Byron in a note, "have ever had an opportunity of witnessing what is here attempted in description, but those who have will probably retain a painful remembrance of that singular beauty which pervades, with few exceptions, the features of the dead a few hours, and but for a few hours, after 'the spirit is not there.'" And he adds the following observation, which might have been made by a medical jurist: "It is to be remarked in cases of violent death by gunshot wounds, the expression is always that of languor, whatever the natural energy of the sufferer's character: but in death from a stab the countenance preserves its traits of feeling or ferocity, and the mind its bias, to the last."

The poet in his famous passage compares modern Greece to the newly dead over which the watcher bends, and the whole of these thirty-five lines, "so beautiful, so original, and so utterly beyond the reach of anyone whose poetical genius was not very decided, and very rich . . . were sufficient," as Sir Egerton Brydges pointed out, "to secure celebrity to this poem."

We have somewhere seen a volume of verse by a medical man with the subtitle "Carmina Cadaveris," but we suspect that these songs were of the comic order usual in hospital gazettes. They have not won their author fame. The cadaver, indeed, in any condition save that in which Wesley and Byron viewed it, is an unpleasant subject for poetry, and this both painters and poets have seemed to recognize, for it is not again a subject for art till it reappears either as the "anatomy" or half-fleshed skeleton of the old "dances of death"—of which Holbein was the chief exponent—or as the clean and symmetrical skeleton. Hamlet's famous address to Yorick's skull is the classic instance of what we may call the poetry of the ossuary. Throughout the scene with the grave-diggers Shakespeare makes his hero dwell on the voicelessness of the skull. Its eyelessness is not touched on, and it has been left to the moderns to advert to the skull's expressive look:

The windows and the doors of light and breath
Long since with such gross curtains draped, O skull,
Have put on caverned grandeur after death—
A lofty look, resigned and beautiful!
A lofty look, inscrutably sublime,
A melancholy of high deathless grace.
In this, methinks, that man half conquers Time
And wellnigh baffles the dark grave's disgrace.

In 1832, according to a letter received in August, 1919, by the authorities at the Museum of the Royal College of Surgeons of England from Mrs. B. R. Reddell, of Dodgeville, Wisconsin, a MS. poem was said to have been found near a perfect human skeleton in the College Museum. William Clift was then Curator, and he is said to have sent it to the *Morning Chronicle*, where its publication

"excited so much attention that every effort was made to discover the author, and a responsible party went so far as to offer a reward of fifty guineas for information that would discover its origin. The author preserved his incognito and, we believe, has never been discovered."

According to Mrs. Reddell's letter, he turns out to have been Captain Samuel Curnow, of St. Ives, Cornwall, her great-grandfather. Captain Curnow had gone to London in connexion with events in his family following on the St. Ives election, where his friend Winthrop Mackworth Praed had unsuccessfully contested the seat. Clift makes no mention of the finding of the poem in his elaborately detailed Museum Diary for the year 1832, and this is curious, for he was fond of *jeux d'esprit* of the kind, and he now and then records extra-collegiate events. Thus, in this year, he stoically records the death of his son in a cab accident! Nor is the poem by Praed, for it is not in his works, though somewhat in his manner. We may therefore take it that Captain Curnow was the author.

TO A SKELETON.

Behold this ruin! 'Twas a skull
Once of ethereal spirit full;
This narrow cell was Life's retreat;
This space was Thought's mysterious seat.
What beauteous visions filled this spot,
What dreams of pleasure long forgot?
Nor hope, nor joy, nor love, nor fear,
Have left one trace of record here.

Beneath this smouldering canopy
Once shone the bright and busy eye;
But start not at the dismal void,—
If social love that eye employed,
If with no lawless fire it gleamed,
But through the dews of kindness beamed,
That eye shall be forever bright
When stars and sun are sunk in night.

Within this hollow cavern hung
The ready, swift and tuneful tongue;
If Falsehood's honey it disdained,
And when it could not praise was chained,
If bold in Virtue's cause it spoke,
Yet gentle concord never broke,—
This silent tongue shall plead for thee
When Time unveils Eternity!

Say, did these fingers delve the mine,
Or with the envied rubies shine?
To hew the rock or wear a gem
Can little now avail to them,
But if the page of Truth they sought,
Or comfort to the mourner brought,
These hands a richer meed shall claim
Than all that wait on Wealth and Fame.

Avails it whether bare or shod
These feet the paths of duty trod?
If from the bowers of Ease they fled,
To seek Affliction's humble shed:
If Grandeur's guilty bribe they spurned,
And home to Virtue's cot returned,—
These feet with angel wings shall vie,
And tread the palace of the sky!

VICTOR G. PLARR.

VOLUNTARY HOSPITALS CONFERENCE.

A CONFERENCE of representatives of London hospitals, convened by the British Hospitals Association, was held in the hall of the Royal Society of Medicine on December 2nd. The Hon. Sir ARTHUR STANLEY presided over an attendance of about 100.

A Committee of London Hospitals.

The CHAIRMAN at the outset read a letter from Charing Cross Hospital stating that, in view of the very different lines on which that hospital worked, its authorities had decided, though not in any truculent spirit, to preserve an independent attitude, and accordingly would not seek representation on the inter-hospital committee which it was proposed to form.

Sir Arthur Stanley went on to say that the difficulty of getting hospital representatives from all over the country to come to London frequently had led to the formation of regional committees in various parts of the country on which all the hospitals in each area should be represented. The formation of these committees had been taking place during the past year, and after a committee had been set up for London the only considerable gap remaining would be in South-West England. The committees were to consist, not necessarily of particular individuals specially appointed for a certain period, but of a certain established number of representatives for each hospital or hospital group, so that the hospitals could send on a particular occasion the persons most fitted to deal with the question for which the committee was summoned.

Sir EDWARD PENTON moved that a regional committee be formed for London, and said that most people concerned in hospital management had felt the need for some such central body, which would be a clearing-house of hospital thought, and would serve the purpose that a chamber of commerce served in industry. Lord GOSCHEN, in seconding, made it plain that the function of the proposed committee would be consultative, not executive. Sir SAMUEL SCOTT asked to what body the regional committees would report, and the CHAIRMAN said that they would report to the Council of the British Hospitals Association, which Council he hoped in time would consist of delegates from regional committees in all parts of the country.

The motion to set up such a committee was unanimously carried.

The CHAIRMAN then proposed and Sir EDWARD PENTON seconded the adoption of the following scheme of representation, by which the delegates would be allotted more or less proportionately to the number of beds in the institutions:

	Total Beds.	Delegates.
The 12 large hospitals with medical schools	5,431	12
The 8 larger general hospitals ...	1,439	4
The 13 smaller general hospitals ...	922	3
Consumption hospitals	508	1
Women's hospitals	296	1
Children's hospitals	669	1
Eye hospitals	258	1
Nerve hospitals	354	1
Cottage hospitals	413	1
Lying-in hospitals	375	1
Unclassified special hospitals (34) ...	2,216	6
Totals	12,881	32

This was subjected to some criticism from various representatives, but the scheme as it stood was agreed to, with the addition that the committee when appointed would have power to co-opt members for any special business.

Financial Position of Hospitals.

Colonel F. B. MILDMAY, M.P., then moved:

That this conference welcomes the appointment by the Minister of Health of a small committee to inquire into and report upon the financial position of the voluntary hospitals throughout the country and to make recommendations.

He said that during the discussion on the Ministry of Health Bill a number of members of Parliament had told him they were absolutely ignorant of hospital conditions and requirements, though most anxious to do their duty in the matter. He therefore called together members of the two Houses who were interested in hospital management, and a very useful interchange of opinion followed. The whole matter was then talked over between Dr. Addison and Sir Arthur Stanley and himself, and the Minister accepted all their views down to the wording of the terms of reference and the composition of the committee of inquiry.

Lord KNUTSFORD, in seconding, said that if they did not meet at a funeral breakfast they were certainly at the bedside of a sinking relative. ("No.") Although they felt inclined to weep there was no reason why the patient should not ultimately rise again. He was sure Dr. Addison would do his best to appoint to this committee men of proper calibre and independent judgement, unconnected with any particular hospital. For the purpose of this inquiry the hospitals should have their accounts submitted to a common audit; it was important for this purpose to get the accounts down to one denominator. He hoped the committee would report quickly and suggest remedial measures. Next March, when the quarterly accounts came in, would be a danger moment for all hospitals.

The CHAIRMAN refused to accept Lord Knutsford's suggestion that they were meeting at a funeral breakfast. It looked rather to him as if they had been called in to deal with a refractory member—of course in the interests of the member himself! Already this action had had the effect of postponing the fatal day from January to March. He suggested that with the resolution there might be conveyed an expression of appreciation of the way in which Colonel Mildmay, himself, and others had been received by the Minister. (Hear, hear.)

The resolution was carried unanimously.

Sir NAPIER BURNETT wished that the meeting had indicated whether, supposing the committee of inquiry recommended some supplementary aid for the voluntary system, it was in favour of such aid coming from the rates or from the State. If the money came from the State he would like to indicate a possible source of revenue.

The Treasury a few months ago issued a statement which showed that in 1919 the total expended on the National Insurance Act was £17,330,000, of which £13,700,000 was for benefits and the rest for administrative and other expenses. The receipts came to £24,400,000, so that there was a surplus from the Act in that one year of over £7,000,000. The Act had now been in existence for some years and there was probably an accumulated surplus of something like fifty millions.

As their hospital difficulties had been so greatly accentuated since the Insurance Act came into operation, and as no hospital benefit was included in the Act, although hospitals were flooded with insurance patients, why should not the Act be amended so as to help the hospitals? A Central Hospitals Board might secure block grants from these millions lying in reserve, and distribute such money to hospitals after an investigation of their needs.

A vote of thanks to the Chairman concluded the proceedings.

A MEDICAL SERVICE SCHEME FOR SCOTLAND.

REPORT OF THE SCOTTISH CONSULTATIVE COUNCIL.

THE Consultative Council on Medical and Allied Services to the Scottish Board of Health has now presented an interim report on a scheme of medical service for Scotland.* The reference to the Council on its constitution in March last was:

"To consider and to make recommendations as to the systematized provision of such forms of medical and allied services as should in the opinion of the Council be available for the community."

While not yet in a position to present to the Board a report dealing in detail with the many issues involved in the reference, the Council has formulated the general principles which in its view should govern a comprehensive health service for the nation, and has framed the outlines of a systematized scheme for medical and allied services; these are embodied in the present report.

From a general survey of existing arrangements for the provision of medical services to the community in Scotland the Council draws two main conclusions:

First, that the conception of the State's direct concern with the health of the people as a whole has recently been widened, and the terms "State Medicine," "Public Health," and "Preventive Medicine," which formerly defined the public responsibility for the physical welfare of the population, have received a more comprehensive interpretation.

Secondly, that the corresponding developments in public provision of medical services, due to the change from a system which dealt mainly with aggregates and their hygienic environment to a system that includes the medical care and treatment of individuals and the safeguarding of individual health, have not proceeded upon any well ordered plan.

From time to time, and without much consideration of its relation to larger issues, provision, more or less complete, has been made by the State for one or another class of the community, or for particular diseases or groups of diseases; but in no case has the existing provision of medical advice and treatment been entirely adequate and complete. This argument is developed in several paragraphs, and the lack of co-ordination and continuity is illustrated by what happens in the case of a child suffering from defect or disease. As a first step towards securing the immediate co-ordination of medical services the Council welcomes the fusion of central authorities in the Board of Health, and regards the unification of local authorities concerned with health and treatment as the next step on the way to the systematic organization of medical services throughout the country.

We print below the summary of recommendations with which the report concludes. It will be seen that the Council holds it of primary importance that the organization of a national health service should be based upon the family as the normal unit, and on the family doctor as the normal medical attendant and guardian; that the first essential for efficient treatment of individuals is not institutional but personal service rendered to the people in their own homes. This central idea is expressed more fully in the body of the report; the paragraph ends thus:

"Without the family doctor as a personal link, not only between agency and agency concerned with the same patient or family, the advantages of the publicly provided medical resources must inevitably come short of full realization."

* Cmd. 1039. Edinburgh: Published by His Majesty's Stationery Office. To be purchased through any bookseller. Price 2d.

The Council, it will be noted, advises that a complete health service ought first to be provided for that class which includes insured persons and their dependants and all other families and persons in like economic circumstances. Here, as elsewhere, the avowed aim of these proposals is to promote the efficiency, direct and indirect, of the family doctor. The need is recognized for distinguishing between distant ideals which should be kept in view and the practical steps that may be taken at once to improve the present conditions of service.

Scotland, it is remarked, presents many different problems from the point of view of medical organization. For the Highlands and Islands a separate Consultative Health Council for health services has already been set up, but in the Lowlands there are "Highland" areas in which the difficulties of medical practice are as great as those in the Highlands proper. The teeming industrial districts in and around Glasgow, and the dense population of the coal belt, present one problem; the city populations, another; and the rural areas, dotted here and there with small industrial centres, have problems of their own. Hence, while the Council's proposals presume a common basis of administration, local modifications of the general plan are seen to be inevitable.

The scheme for clinical laboratories, mentioned in paragraph 9 of the summary, is set out at some length in the body of the report. A working plan of organization was drawn up by a committee of the Council with the assistance of Professor James Ritchie. It is founded on the idea that there should be three grades of clinical laboratories: (1) Large central (first grade or headquarters) laboratories, six in number; each would stand in a sort of central relation to (2) the second grade or local laboratory-clinics in the larger towns of its region; upon these again would depend (3) the "side-room" or third grade laboratory-clinics, situated at first wherever a cottage hospital now exists. It is explained that arrangements for the third grade type of laboratories could easily be made for the small town centres, but something of the same kind must also be provided in the larger centres themselves. There should, for example, be about six of these minor laboratories in Edinburgh and at least twelve in Glasgow, which the local practitioners should frequent. The directors of the six headquarters laboratories should meet frequently and co-operate continuously. While the report does not deal with the financial aspects of the Council's recommendations, it is submitted that a grant in aid should be given for the establishment in Scotland of a system of laboratories and clinics such as that outlined by the special committee.

The Council is satisfied that the general scheme of medical services recommended in the report would be both economic in practice and directly profitable to the State, and this view is maintained in three cogent sentences towards the end of the report. Should the principles put forward meet with approval, the Council proposes to apply itself to the further consideration of necessary details, dealing first with improvements that seem immediately desirable and practicable, and reserving others which cannot well be compassed until that foundation is laid. The keynote of the whole scheme for promoting the communal health, it says, should be co-operation between all the particular agencies concerned. The impossibility of segregating the preventive from the curative side of medical practice must be more fully recognized by all, and the machinery devised for one common purpose so constructed or reconstructed as to work together as a single whole. Complete success can only be attained by the co-operation of every practising member of the medical profession, howsoever employed.

SUMMARY OF RECOMMENDATIONS.

1. Unification of the various local authorities concerned with health is urgently necessary as the next step on the way to the systematic organization of medical services throughout the country.

2. A complete and adequate medical service should be brought within the reach of every member of the community. We do not contemplate that such service should be provided for all at the public expense, or that it should be furnished to all by a body of State or civic officials and practitioners; but we recommend that the State should assume the duty of so organizing and supplementing existing arrangements as to ensure that to every unit of the population such medical advice and treatment as are necessary for the maintenance of health and efficiency are readily accessible.

3. The organization of the health service of the nation should be based upon the *family* as the normal unit and on the *family doctor* as the normal medical attendant and guardian. The resources of all the auxiliary health agencies established for the public benefit should be mediated to the individual patient through the family doctor.

4. Public provision should be made for a complete medical service for the whole population of the "National Insurance" grade. The present medical service for the insured should be *expanded* so as to provide everything that is still necessary to make it adequate and complete, and *extended* so as to include within its scope the dependants of the insured, all persons (including dependants) of the same economic status as the present insured class, and all now entitled to medical service under the existing Poor Law. In this extended service should also be merged the existing arrangements for the treatment of cases of disability arising from the war; and to this end we recommend that the transfer to the Scottish Board of Health of the powers and duties exercised in Scotland by the Ministry of Pensions in connexion with the treatment of discharged disabled sailors and soldiers should be accelerated.

5. Arrangements should also be made, as part of the general medical service scheme for the country, to bring within the reach of a section of the community above the economic level of the insured class, certain special services for which that section of the community is unable to make adequate private provision.

6. We recommend as an urgent need the provision of small local "hospices" or "recovery homes" for cases of ordinary illness where the patient cannot be properly treated at home and where no "cottage hospital" or "nursing home" is available.

7. We similarly recommend the provision of "invalid homes" for chronic invalids. Existing Poor Law hospital buildings, if not suitable for use as local public hospitals, might be made use of for this purpose.

8. Under the family medical service which we propose the family doctor should be provided with all necessary supplementary professional advice and assistance. All serious surgical cases, save a negligible few, should be sent to hospital for operation. For acute medical and other cases arrangements should be made for providing the services of "District Consultants" chosen by the local members of the profession, and for procuring further expert help or advice where necessary. For ambulant medical and surgical cases arrangements should be made, either with hospitals or otherwise, for the establishment of consultation clinics, where the services of experts would be at command under properly regulated conditions. Co-operation among general practitioners themselves for purposes of consultation and treatment should, however, be promoted.

9. Facilities should be afforded to all practitioners and to all classes under their care for reference to clinical laboratories, and (under suitable conditions) to experts in certain special branches of medical science (ophthalmic, aural, dermatological, dental, etc.).

We submit the outlines of a scheme of Laboratories and Clinics [included in the Report].

10. We reserve our recommendations on the question of hospital provision, and its place in relation to the medical service of the nation, until we have received the Report of a Joint Committee of this and other Consultative Councils which is considering a special reference to it by the Board on the question of the general hospitals service.

11. We urge, however, the necessity for a considerable increase in the number of convalescent homes. We classify the types of convalescent homes required as follows:

(*a*) Annexes or auxiliaries to general hospitals to which patients could be transferred a few days after surgical operation or after the acuter stages of illness in medical cases have been passed. The provision of these would do more to relieve hospital congestion than almost any other available method.
(*b*) Convalescent institutions in the more restricted meaning of the term for patients who have "recovered" from their illnesses and been discharged, but who have not yet been restored to their normal health and capacity for work.
(*c*) Preventive or rest homes.

12. In providing for the nursing requirements of the domiciliary medical service the Queen Victoria Jubilee Nurses organization should be utilized as furnishing a suitable basis for a national system of skilled "district" nursing.

13. We recommend the provision in populous areas of a service of fully trained health visitors who would serve as *liaison* officers between the local health services and centres, the family for whose benefit the services and centres are provided, and the family doctor in charge of its health.

14. An adequate maternity service should be provided as soon as a sufficient number of trained midwives is available as auxiliaries to medical practitioners in charge of the family health. Every expectant mother should be assured beforehand of the advice and services of a doctor and of a midwife should she choose or be advised to engage one. A necessary adjunct of such a maternity service would be the provision in each district of sufficient beds for difficult cases, and for cases where the home conditions are unsuitable.

15. We regard it as essential to a complete medical service that adequate facilities for preventive and conservative dentistry should be provided. A consulting dental surgeon should be attached to each laboratory-clinic as proposed in our scheme.

16. We recommend that the pharmaceutical arrangements in connexion with the proposed medical service should follow the provisions of Section 15 (5) of the National Insurance Act, 1911.

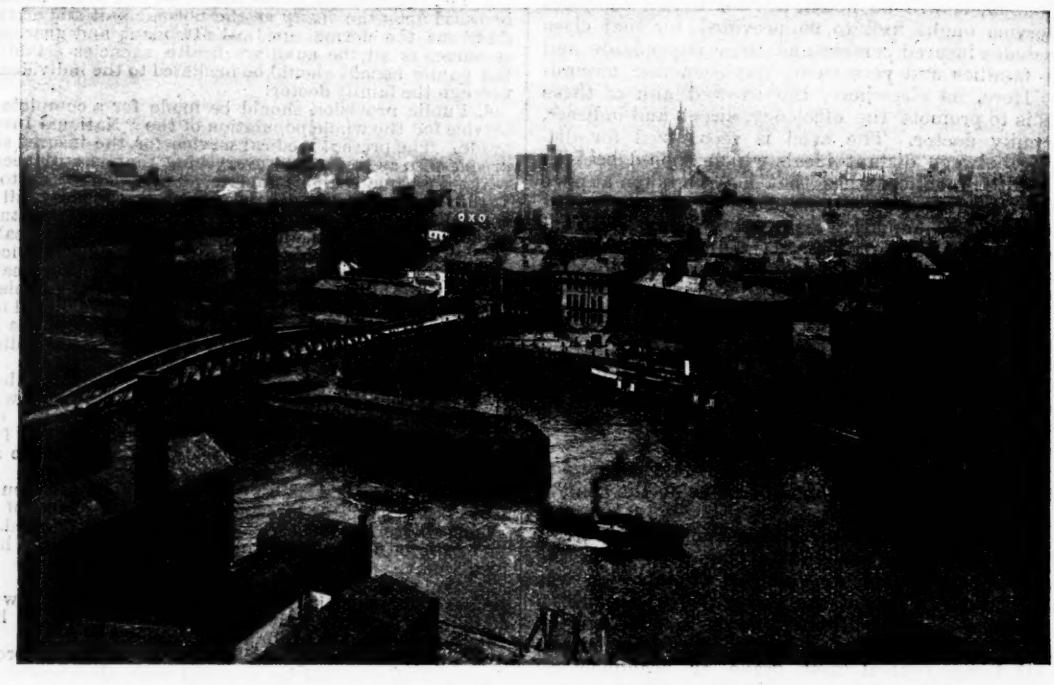

FIG. 1.—Newcastle as seen from the Gateshead side of the river. The Castle, the Moot Hall, and the Cathedral are seen in the midst of modern surroundings. (Block by permission from Reid's *Handbook to Newcastle-upon-Tyne.*)

EIGHTY-NINTH ANNUAL MEETING
of the
British Medical Association,
NEWCASTLE-UPON-TYNE, 1921.

THE expression "carrying coals to Newcastle" is responsible for the one-sided idea of this city which commonly prevails, for strangers are wont to imagine that from every point of view coal is the inhabitants' only interest! This impression is certainly fostered by the approach by rail, for only the industrial aspects are apparent, and it is indeed difficult to appreciate that Newcastle is the centre of a very beautiful district. Its story goes back to pre-historic times, and there is no part of the country where the Roman occupation is more plentifully illustrated by tangible remains than in the adjoining parts of Northumberland.

As our first illustration shows, the observant traveller from the South can easily pick out the ancient Castle, the Moot Hall built on the site of an earlier court of justice, and the mediaeval churches, studded among the buildings of the modern city.

NEWCASTLE'S HISTORY.

The history of the city really begins with the Emperor Hadrian, who bridged the Tyne in A.D. 120, though there can be little doubt that the ancient Britons appreciated the strategic importance of the site, and this is borne out by the sepulchral remains of the primaeval period which have been found in the neighbourhood.

In order to the more thoroughly strengthen his hold on the country, Hadrian caused a wall to be built, stretching from the Tyne to the Solway, and this is the Roman Wall of which so much remains, and within easy reach of the city. At distances of about four miles fortified camps or "stations" were distributed along the wall, and Newcastle occupies the site of the second station, known as Pons Aelii, from its proximity to the Bridge of Hadrian, who was of the Aelian family. Nothing now remains of what must have been an important station but a few sculptured stones and some altars and fragments of pottery, which have from time to time been discovered, and are preserved in the Black Gate and other local museums.

After the greatness of the Romans had waxed and finally waned there was a period of oblivion, in which we can imagine that the vengeance of the ancient Britons spent itself in the destruction of all that reminded them of their oppressors. This desolate age was succeeded by the Saxon occupation, of which nothing tangible remains in the town, though there are ample evidences of this period at Corbridge-on-Tyne, the Corstopium of the Romans, some sixteen miles to the west of the city.

Soon after the Conquest, William came north to quell one of the many risings with which the country was so familiar. On his return in 1072 he was compelled to halt at Newcastle on account of the flooding of the river and the partial destruction of the bridge. Probably in consequence of these experiences, he directed his son Robert Curthose to erect a castle for the protection of the bridge. This first castle was doubtless constructed of wood, and was succeeded in a comparatively short time by a more substantial structure of stone.

The town sprang up around the castle, and William Rufus must be looked upon as its founder, for he collected burgesses whose interest it was to foster the well being of the new community. The fortunes of the place fluctuated in its early days, and during the troubled reign of Stephen it perforce owed allegiance to the Scottish throne. When Henry II regained possession of the border counties he gave the inhabitants increased privileges and replaced the castle of Rufus by the present structure, hence the "new castle" which gave the name to the town.

The next reign was an important one in local history, for in the time of Henry III the coal trade seems to have sprung into being, though there is some evidence that seams near the surface—drifts—were previously worked by the Romans. This reign also saw the government of the town vested in a mayor chosen by the people in lieu of a provost appointed by the Crown. In the time of the first three Edwards the town became the rendezvous and base for the many expeditions which those princes made

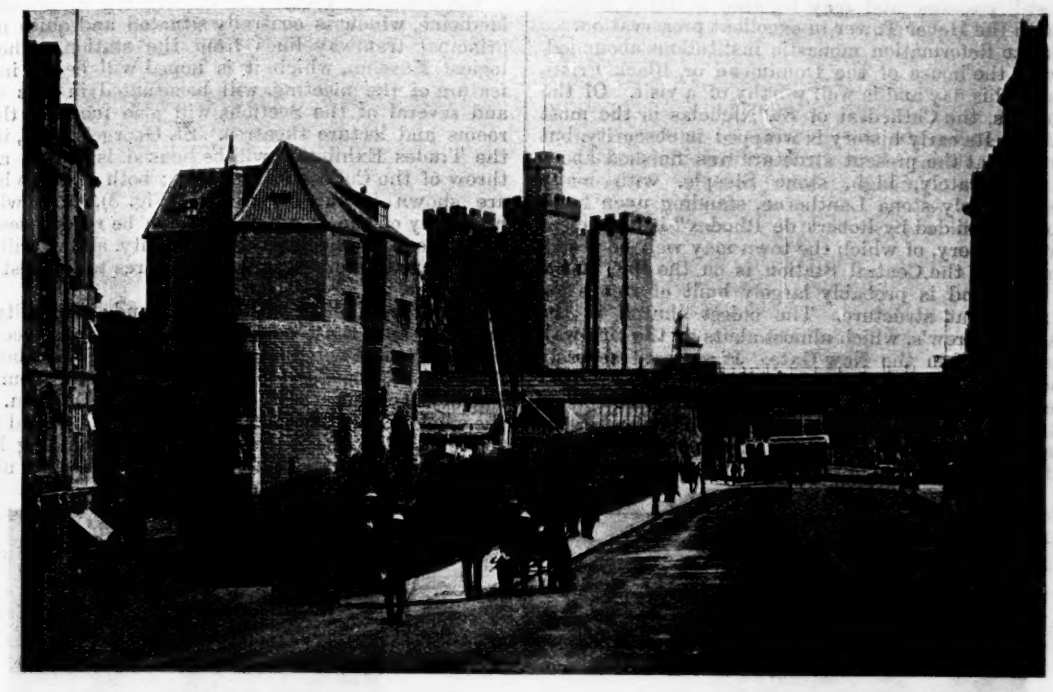

FIG. 2.—The Old Castle and Black Gate separated by the Tynemouth branch of the North-Eastern Railway. (Block by permission from Reid's *Handbook to Newcastle-upon-Tyne.*)

into Scotland, and in consequence it suffered much from war and pestilence.

The town was already walled, and the repair of its defences became a heavy charge on the inhabitants. We must pass over the striking events which occupied the years up to the middle of the seventeenth century, only stopping to take cognizance of that characteristic border feud in 1388 between the Douglas and Sir Henry Percy, which lives in the beautiful ballad of "Chevy Chase":

> It fell about the Lammas tide,
> When the muir-men win their hay,
> The doughty Douglas bound him to ride
> Into England to drive a prey.
>
> * * *
>
> This deed was done at the Otterbourne,
> About the breaking of the dey;
> Earl Douglas was buried at the braken bush,
> And the Percy led captive away.

In the year 1644 the town was besieged by the Earl of Leven, and it was on account of the stubborn resistance then offered that the King conferred the motto which adorns the city arms:

> "Fortiter defendit triumphans."

On January 28th, 1647, the Scottish army delivered up Charles I in Newcastle to commissioners appointed by Parliament. The existing remains of a considerable stretch of the town walls adds interest to the story of the alarm caused by the rising of the Jacobites in 1715, for we read that the gates were walled up with solid masonry and a body of 700 volunteers raised for the defence of the town. In the cold perspective of history, succeeding events, though stirring enough at the time, have been domestic rather than national and have been mostly concerned with the development of industry and the useful arts.

The opening of the Newcastle and Carlisle Railway in 1838 was an event of first importance, which largely influenced not only the commercial activity of the immediate district, but throughout the length and breadth of the land, and the city is proud to be able to claim both George and Robert Stephenson as her gifted citizens.

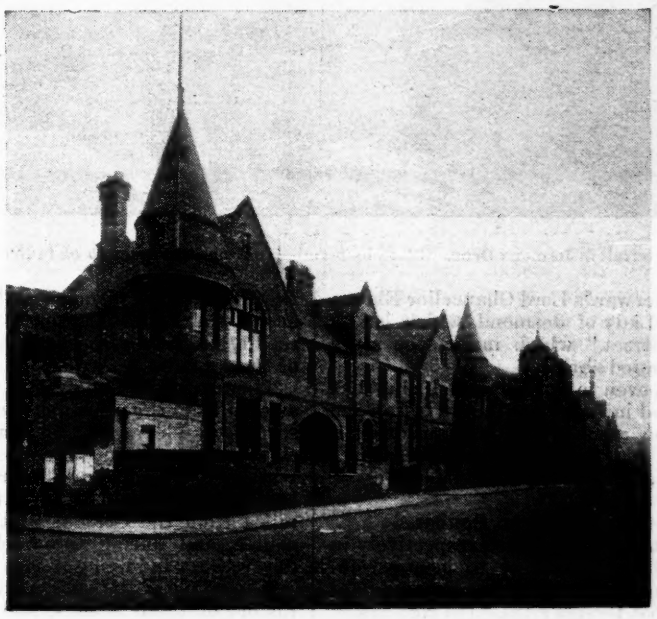

FIG. 3.—St. George's Drill Hall and the College of Medicine.

ANCIENT REMAINS IN NEWCASTLE AND VICINITY.

> Still linger in our Northern clime
> Some remnant of the good old time.

The Castle of to-day is but the Keep of what must have been a large and imposing Norman stronghold, occupying an area ten times greater than the site of the present building. The boundary wall and the out-buildings have long since disappeared, though the south postern remains to this day, the only example of a Norman postern in England. It is with peculiar feelings that the visitor traverses the arched passage through the castle wall and treads the stair which has served as an exit since the time of Robert Curthose. The Black Gate, which is shown in our illustration (Fig. 2), was erected by Henry III; it became from that time the chief entrance to the castle, and was strongly guarded by a double moat, portcullis, and drawbridges. It is now used by the Antiquarian Society as a museum, in which their exceedingly fine collection of Roman remains are housed.

The city walls were originally two miles in circumference. 12 to 20 ft. high, and some 8 ft. thick. A large

stretch still remains, and may be seen in Back Stowell Street with the Heber Tower in excellent preservation.

Before the Reformation monastic institutions abounded, and part of the house of the Dominican or Black Friars remains to this day and is well worthy of a visit. Of the city churches, the Cathedral of St. Nicholas is the most interesting. Its early history is wrapped in obscurity, but it is known that the present structure was finished about 1350. "Its stately, high, stone Steeple, with many pinakles, a stately stone Lantherne, standing upon foure stone Arches, builded by Robert de Rhodes" is its ancient and principal glory, of which the town may well be proud. St. John's, near the Central Station, is on the line of the Roman Wall, and is probably largely built of stones obtained from that structure. The oldest church in the town is St. Andrew's, which almost abuts on the city wall and was just within the New Gate. It suffered severely from the Scottish cannon during the siege of 1644.

Subsequent articles must deal with the many objects of interest in the old town: of Akenside Hill, named after the physician poet, a native of the city; of the old building in the Side, with the window from which Bessie Surtees eloped with John Scott, afterwards Lord Chancellor Eldon; and of the Chapel of our Lady of Jesmond, which led to the origin of "Pilgrim Street," which marks the route taken by pilgrims to this noted shrine.

Lack of space forbids us even to mention much else that is of general as well as local interest, but those visiting the city in July next may be assured that its antiquarian treasures, its institutions, and its collections will furnish an added interest to the meeting itself.

THE INFIRMARY AND THE MEDICAL SCHOOL.

The history of these institutions, founded respectively in 1751 and 1832, is of sufficient interest to occupy considerable space in a subsequent article. Let us explain at once that the Medical School, though situated in Newcastle, is part of the University of Durham, with which it became affiliated in 1852, the connexion being made still closer in 1870. With Armstrong College it forms the Newcastle branch of the parent university.

LOCAL ARRANGEMENTS FOR THE MEETING.

The local arrangements for the Annual Meeting next July are now well in hand and the various committees are at work. The President-elect is Professor David Drummond, C.B.E., President of the University of Durham College of Medicine and Professor of Medicine in the Medical Faculty.

The reception rooms will be situated in the College of Medicine, which is centrally situated and quite near the principal tramway lines from the station. The Pathological Museum, which it is hoped will be an important feature of the meeting, will be situated in this building, and several of the Sections will also meet in the class-rooms and lecture theatres. St. George's Hall, in which the Trades Exhibition will be housed, is within a stone's throw of the College of Medicine; both of these buildings are shown in our illustration (Fig. 3), from which the proximity of the two buildings can be readily seen. The hall is one of the largest in the city, and it will be possible for exhibitors to show their wares to the best possible advantage.

Armstrong College will also extend hospitality to the meeting, and those Sections which do not meet in the Medical School will find quarters there. The building is in itself of considerable interest, and is the home of the Faculty of Science of the University of Durham. During the whole of the late war the 1st Northern General Hospital was domiciled in the college, and the building has only just been redecorated and restored to its former use. The Royal Victoria Infirmary and Pensions Hospital are just across the road from Armstrong College, and both are readily accessible from the reception rooms and the centre of the town.

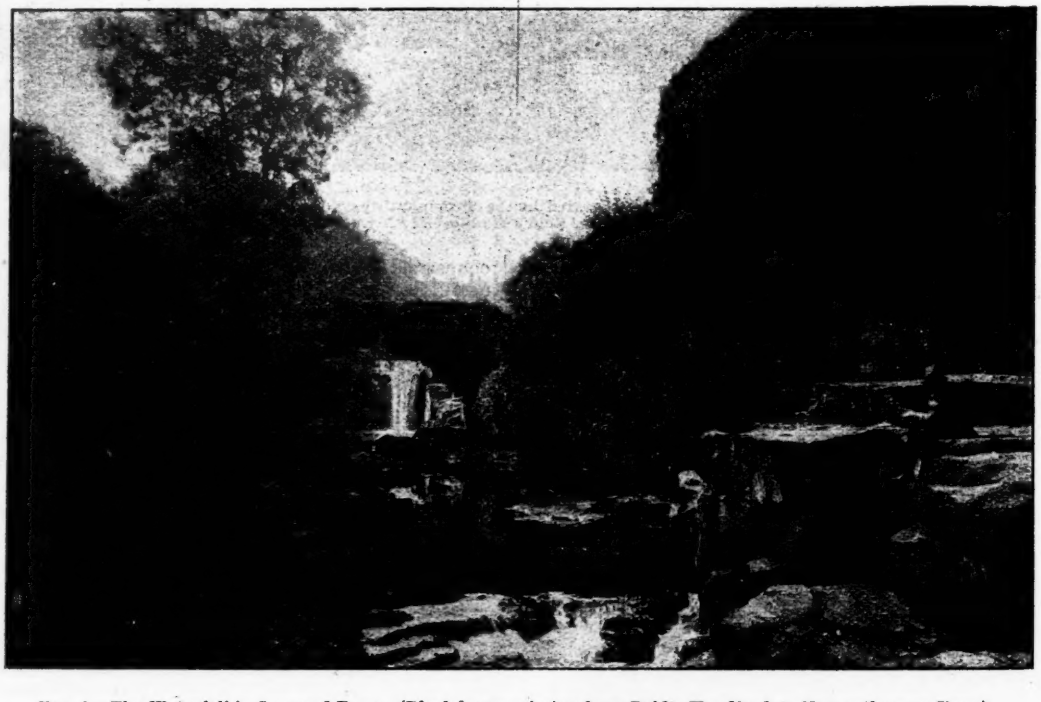

FIG. 4.—The Waterfall in Jesmond Dene. (Block by permission from Reid's *Handbook to Newcastle-upon-Tyne.*)

Those who only know the smoke and dirt of Newcastle as seen from the railway line or Central Station will be surprised to learn that there are several fine parks in the city and the immediate outskirts, and Jesmond Dene, which is shown in our illustration (Fig. 4), is known as a beauty spot far and wide. At Gosforth Park, about three miles from the Central Station, there is a very fine golf course, and during the week facilities will be given to devotees for indulging in this relaxation.

The whole of the surrounding district is steeped in the history of these islands, and excursions will be arranged to visit the Roman Wall; Rothbury, with its ancient British remains, and Cragside, the seat of Lord Armstrong; Jarrow, with the Monastery of the Venerable Bede, and Durham for the Cathedral and Castle. Others may be especially interested in the industries of the district, and in this direction the wishes of all can be satisfied, for almost every kind of manufacture is represented on the Tyneside and its vicinity, where shipyards, ironworks, chemical works, and, of course, coal mines abound.

Inquiries concerning the meeting should be addressed to Mr. R. J. Willan, M.V.O., O.B.E., General Secretary, at No. 6, Kensington Terrace, Newcastle-upon-Tyne.

British Medical Journal.

SATURDAY, DECEMBER 11TH, 1920.

THE ASSOCIATION IN 1920.

THE luxury of motor transport is, perhaps, more fully appreciated by the pedestrian than by the man in the car. The latter is, from the nature of the case, more prone to consider the speed inadequate. He occasionally blames gear or engine for defects due to his own lack of skill, and he has been known to condemn the car when he himself has neglected to fill the petrol tank. This parable is worthy of consideration. For the moment it suggests that the man in the car may have something to learn from the attitude of the man on the pavement. Thus it may not be unprofitable to attempt to visualize the more recent work of the British Medical Association as it would appear to a disinterested observer of vocational organization—one who is familiar with its general development at the present time, but without any special knowledge of the particular problems of the medical practitioner. The result may prove the more striking if attention is directed solely to the record of the last twelve months, during which normal activities have been resumed after the period of war and demobilization. Detail is out of place in such a review. Only the broad general impression can be presented, but it is this general impression, so often missed in a closer study of particular problems, which is necessary to a just appreciation of the position as a whole.

From this standpoint, then, the extended sphere of operations would probably be the first feature for comment. The Medical Congress at Durban welcomed the representative of the parent Association in October. A few months earlier, intervention at home was of value in a dispute between the profession and the Lodges in Victoria. So also the far-scattered units of the Colonial Medical Services, too remote for effective influence upon developments determined in some measure from London, have found an advocate whose representations cannot ultimately be ignored.

A closer view distinguishes a diversity of activities as uncommon in its way. Organizations there are in plenty directed to some one particular end, and the measure of their efficiency is often determined by their concentration. In the case of the Association the record of the last twelve months shows definite achievement balanced by projected advance in almost every sphere proper to voluntary organization. To start with the narrower economic aspect. The new rates obtained for the Indian Medical Service, the increased insurance capitation fee and the increased mileage allowance for rural insurance practitioners are alone achievements comparable to those of the stronger trade unions during the same period. And it must not be forgotten that the period has been extraordinarily difficult for the professional as opposed to the industrial worker. It is usually easier to raise a bare subsistence minimum than to readjust an efficiency rate, and material production has sometimes a stronger position than personal service where collective bargaining is concerned. Progress in the instances just cited is not, of course, limited to increased remuneration. The work done in modification of conditions of service is equally striking. Such modification, if the experience of the trade unions is any criterion, is often more difficult than a mere advance in remuneration. Here, as elsewhere, the Association has been concerned with the creation and adjustment of higher standards. Passing to the sphere of legislation, the year is marked by the Act for the State Registration of Nurses and the introduction of the Proprietary Medicines Bill—to quote two large measures which are more directly the outcome of the policy and action of the Association. The Government programme includes proposals for the reform of coroners' law and the law of birth and death registration and certification, objects equally prominent in Association policy. From legislation to administration is an easy transition. Here the consolidation of departments under the Ministry of Health and the functioning of the Medical Consultative Councils may fairly be included in the survey, as the outcome in no small measure of the work of the Association.

In the service of science the general observer will naturally have more difficulty in distinguishing the particular features of the period, but he will appreciate the significance of the great Annual Meeting at Cambridge, the increased grants for research, and the popularity of the British Medical Association lecture scheme. If he is wise in distinguishing the basis of all stable organization, these things will also stand to him as a sign of fellowship grounded on common service and experience, nor will he pass over in this connexion the resumption of the normal social activities of the Divisions.

So far attention has been directed to the nature of the work accomplished or undertaken. The diversity of the classes affected also claims consideration. The Indian Medical Service, the Colonial Medical Service, and the insurance practitioners have already been mentioned. Such groups offer the normal field for effective combined action. But the work has not stopped there. Small isolated groups such as the medical officers of the Gas Light and Coke Company and those of Trinity House have seen their rates doubled or more than doubled by the intervention of the Association; and the fees for medical examinations for life assurance companies—a matter affecting all classes of the profession—have been the subject of central action. Cutting of rates has been countered in the case of lecturers to St. John Ambulance classes, an instance small in itself, but significant of salutary attention to detail. Nor have needs of the moment been overlooked in work for the future. Early in the year the right to their gratuity of temporary officers in the R.A.M.C. accepting new temporary contracts was vindicated. Later, temporary officers transferring to the permanent service were assisted in their claim to reckon temporary service for pay and seniority. Further, the help of the Association has not been lacking for the individual member; witness the case of the officer in the I.M.S. for whom an India Office miscalculation of Rs. 460 per mensem was rectified on representations from the central office; the members who secured early delivery of motor cars in the difficult period at the beginning of the year; the local authorities which have had to concede advances refused to their medical officers on individual application. The multiplication of instances beyond a certain point merely serves to confuse. Those cited are sufficient to justify the general impression that the resources of the British Medical Association are readily available for the service of its members.

In appraising the value of the record thus outlined two tests will suggest themselves to the inquirer—

the test of recognition and the test of current criticism. The application of both is possible without transgressing the bounds of the period under review. Of recognition there are two standards—membership and the attitude of authorities and individuals outside the profession itself. The position is satisfactory in respect of both: membership of the Association is more than keeping pace with the increase in the numerical strength of the profession; and external recognition is even more striking to one to whom it is not a matter of course. Commissioned service of the Crown, which normally shuts the individual off from all extra-service assistance, does not deprive a medical practitioner of the help of his Association: the Government departments concerned not only invite advice and assistance from the British Medical Association in matters of general application, but also consider representations in individual instances. In civil life there is no need to go beyond the position assigned to the Insurance Acts Committee. With such examples, the question of recognition cannot remain in doubt. If the year does not show any new developments in recognition it is because recognition has not been in question.

The second test is that of criticism. Here it is not so much the balance of favourable and adverse verdicts that has significance as their source and the general nature of the indictment offered. Roughly speaking, whilst criticisms of policy vary with the interests at stake, the only class which appears to entertain serious doubts as to the potentialities of the Association is a certain section of the medical profession. Hostile criticism is generally negative; it alleges either that the Association has not done certain things or could not do them if it would. On the second point the disinterested observer has his comment ready, for he can point to what has in fact been done. On the first, whilst admitting himself incompetent to pass a final judgement in certain professional matters, he will probably observe that the mere assumption that these matters lie within the province of the Association is a striking comment upon its power.

Further the detached observer can hardly go. He must appreciate the continuity and stability evidenced by the fruition during this one year of so much work in the pre-war period. He will respect the policy which has sought for settlement by agreement and consent, and will realize that much which should be done is still undone; but comprehensive criticism he will find it impossible to offer, mainly because he will have no adequate standard of comparison. For one conclusion will have followed surely from his survey, however brief: the conclusion that, in the broader sense, there is no existing vocational organization comparable to the British Medical Association at once in the scope and variety of its aims and work.

TUBERCULOSIS.

THE diversity of views expressed in the correspondence on tuberculous milk shows that much work remains to be done in comparative medicine and pathology before a final decision can be reached as to the exact part played by milk in the spread of tuberculosis. Many facts have, however, been established that may help to guide us in forming our opinions, and prevent us from jumping to premature conclusions.

The relation of bovine to human tuberculosis has given rise to discussions in the past and to much uncertainty at the present time. Calmette, in his recently published book on tuberculosis, which we review at p. 894, sums up the question of the specific difference between the two types by saying that although there are certain special biological characteristics which enable us to recognize in many instances the human or bovine origin of tubercle bacilli their specificity is not absolute. The bacillus commonly found in chronic tuberculous lesions in man is ordinarily non-virulent for cows, and the bacillus of bovine origin may not always prove virulent for man. Calves are less easily infected with the human type than children with the bovine. Nevertheless, Eber succeeded in infecting calves with human bacilli after passage through guinea-pigs, and recovered from the lesions in the calf bacilli which appeared to have the bovine characters, whilst cultures taken direct from the original human sources employed in the experiment had the human characters. The possibility of transforming the one type into the other cannot be regarded as conclusively proved by these experiments, still less can it be asserted that such a transformation habitually occurs in Nature. But it would be dangerous to assume this transformation impossible. Bovine tuberculosis, where it exists, constitutes a real menace to man on account of the susceptibility of young children to this type of infection.

Mitchell found that of 72 children suffering from cervical adenitis 65 (that is, 90 per cent.) were infected with the bovine type of bacillus. Fraser's figures for tuberculosis of bones and joints showed a similar predominance of this type. Other observers have come to like conclusions. So that Calmette remarks, "It is incontestable that in various European countries, as well as in the United States and Canada, bovine tuberculosis represents a sufficiently important contamination of the human species to make its abolition necessary."

It is not questioned that the mode of entry of the bovine bacillus is mainly by ingestion of tuberculous milk. We are therefore fully justified in requiring non-tuberculous milk in the interests of infants if they are to be fed on cow's milk. There are countries, on the other hand, where cow's milk is never used for infant feeding, and there are districts where bovine tuberculosis is practically unknown, yet under both these conditions a high rate of human mortality from tuberculosis may exist. In such circumstances the contagion is clearly from man to man. So that evidently we cannot ignore either source of infection in our efforts to combat tuberculosis. Dr. Marcus Paterson, in his letter of November 6th, rightly insisted that the value of small doses of tuberculous milk in protecting children against subsequent infections is doubtful. "I should altogether neglect," he wrote, "this haphazard uncontrolled source of possible immunization." The suggestion has been made that slight infections in early life may give rise to some degree of acquired immunity. The nature of this immunity or increased resistance is not generally appreciated, although much experimental work has been carried out on the subject.

The study of immunity to the tubercle bacillus begins with Koch's remarkable observation in 1891 that if susceptible animals are infected with a sufficiently small dose of bacilli to produce a chronic disease subsequent infections with minimal doses do not cause death, but an intolerance to the presence of the bacilli. This is manifested in efforts to expel the bacilli by local necrosis of the tissues where they lodge, and is sometimes known as Koch's phenomenon. Calmette and his fellow workers carried the investigation further and demonstrated that tuberculous animals are incomparably more resistant to intravenous inoculation than animals free from previous infection. Moreover, tuberculosis by

reinfection (or more correctly superinfection) always assumes a chronic course. Calmette found, for instance, that a series of pulmonary infections by inhalation at short intervals is far less dangerous than a single one; but if the subsequent infections follow the initial infection after a long interval Koch's phenomenon occurs. That is to say, the expulsive efforts are more violent and remain localized to the place where the bacilli were introduced; massive necrotic lesions and extensive cellular destruction ensue. In view of these observations Fishberg's dogmatic statement that "experimental investigations have proved that it is impossible to reinfect a tuberculous animal with tubercle bacilli" needs some qualification or some indication that superinfection is not impossible.

Calmette explains the importance of Koch's phenomenon in the production of immunity thus: The organism becomes more and more intolerant of the bacillus at each superinfection. This intolerance is displayed in a more rapid tendency to caseation and suppuration of the tubercles and to the prompt expulsion of their contents. Clinical evidence here supports the experimental. Severe forms of pulmonary tuberculosis are rare in individuals who in infancy have suffered from a localized tuberculous lesion. We can see a reason why pulmonary phthisis and chronic tuberculosis only occur in subjects previously infected. They are individuals who are rendered very resistant by a first attack, but have not escaped frequent massive superinfections. "Virgin subjects" (rural dwellers transported to towns and certain native races) succumb to severe and rapidly fatal forms when first exposed to massive doses at close quarters.

If we concluded our examination at this point we might be satisfied that early infection in childhood was desirable by reason of the resistance it may confer on fortunate survivors. But this resistance is not a true immunity in the sense that the subject is cured of infection and is incapable of further infection. If the tubercle bacilli die off in the tissues and do not remain latent and living, then reinfection behaves as in virgin soil—such subjects have ceased to be resistant. Unfortunately it is from resistants that the chief dissemination of bacilli occurs. With each superinfection a resistant individual increases his intolerance for the bacillus, and by his capacity for local necrosis and prompt expulsion of the infecting agent becomes more dangerous to his neighbours than his disease is to himself. These "resistants" form the army of chronic phthisics with cavitation and abundant sputum teeming with bacilli. Herein lies the gravest danger of familial infection, in that it tends to afford opportunities for the production of "resistants" by initial infection, and for rendering them, through superinfections, increasingly intolerant and increasingly capable of spreading infection. Dr. Cobbett, in his letter of November 6th, pointed out that some degree of immunization of susceptible animals has been experimentally produced by injection of tubercle bacilli, but the immunity is short-lasting and its production uncertain. Moreover, the test animals demonstrated that the immunity only protected them from severe and fatal tuberculosis; it did not prevent them from harbouring the bacilli in a latent form. Calmette refers to this sort of immunity as placing the animals in a condition regarding superinfection precisely like that of "resistants." These considerations apply with equal force to all attempts at artificial protection by vaccination with increasing doses of living virulent bacilli that have hitherto been made.

Surveying these problems, then, in the light of our present incomplete knowledge, certain interim conclusions may be reached which will not stand in the way of accepting further knowledge as it is forthcoming. The first is that, since infants are clearly susceptible to bovine infection, they should be protected against the opportunities of contamination. In the second place, it must be recognized that the principal source of human contagion is "familial," and measures for protection must be framed with this outstanding fact borne in mind. Finally, whilst it may be admitted that early slight infection may produce resistant individuals, such persons require guarding against later infections lest they increase the already large numbers of disseminators of tuberculosis.

EARLY MEDICAL JOURNALS.

LORD NORTHCLIFFE has accepted December 2nd, 1620, as the date of the publication of the first issue of the first British newspaper, and the tercentenary has been celebrated by the publication of a chronological record of all English newspapers, magazines, and reviews, compiled by Mr. J. G. Muddiman. The news sheet or corrant published on the date given was printed in Amsterdam, and it was not until the following year that any examples were first printed in London. These early corrantos were half sheets in folio printed on both sides. Twenty years later reports of proceedings in Parliament were embodied, and eventually, in 1665, when the court had been driven by the great plague from London to Oxford, an ancestor of Mr. Muddiman produced there what shortly afterwards became, and still is, the *London Gazette*, "the venerable parent of our existing periodical press." The first English medical journal appears to have been the *Medicina Curiosa*, printed for Thomas Basset at the George in Fleet Street; the name of its editor is not mentioned and is apparently not known. The first number, published on June 17th, 1684, contained 56 pages, the second and last, published on October 23rd of the same year, contained 64 pages. The first number consisted chiefly of translations or abstracts of articles published in French or Latin, but the second contained "an extract of some physical matters contained in a book called Memoirs for the Natural History of Human Blood, especially the Spirit of that Liquor, set forth this year in English by the Honourable Robert Boyle." Another article was entitled "The Use of Quinquina for curing fevers, published by the French King's order, extracted from the Paris *Journal de Scavans*, March 15th, 1683, a secret bought by the King from Sir Robert Talbor and called the English remedy." The *Medicina Curiosa* was, in the character of its matter and in the style of its title-page, an imitation of an annual entitled *Miscellana Curiosa Medico-Physica*, compiled by the Academy of Vienna and first published at Leipzig in 1670. The first 110 observations contained in this publication dealt exclusively with medical subjects, and consisted chiefly of reports of cases with commentaries; then, after a separate dedication to the Emperor, follows a set of observations communicated by Dr. Georgius Sebastianus Jung on curiosities of various sorts, generally trivial. Next comes more medical reports from divers hands, and the volume closes with an essay on snakes by Franciscus Radi, translated out of Italian into Latin. During the eighteenth century small informal societies existed in London and other centres, which met for discussion. Some of these societies published a volume of essays and reports annually or at irregular intervals. Dr. Arnold Chaplin in his FitzPatrick Lectures mentioned a number of medical publications, most of them short-lived, which appeared at various dates from 1757 onwards, but nothing of the nature of a medical journal was published till towards the end of that century. The *London Medical Journal* was founded by Dr. Simmons in

1781; ten years later its name was changed to *Medical Facts and Observations*; it ceased to appear in 1791. The *Medico-Chirurgical Review*, started in 1795, continued until 1807. The first medical journal to be firmly established in this country would seem to have been the *Medical and Physical Journal*. It was edited by Dr. T. Bradley and Dr. F. M. Willich, and professed to give its readers the "earliest information on subjects of medicine, surgery, pharmacy, chemistry, and natural history, and a critical analysis of all new books in those departments of literature." The first number appeared in March, 1799, and it was continued until 1833. The *British and Foreign Medico-Chirurgical Review* was founded in 1816 and had a long and useful career, but it was more of the nature of a review of current literature than what is now understood as a medical journal. The pioneer of these was the *Lancet*, started by Thomas Wakley in October, 1823; his main idea at the beginning was to assist his readers to obtain from it the education now called "post-graduate." The forerunner of the *British Medical Journal*, the *Provincial Medical Journal*, was started in 1840 by two members of the Provincial Medical and Surgical Association which had been founded by Sir Charles Hastings in 1832. It soon changed its name to the *Provincial Medical and Surgical Journal*, but when in 1856 the title of the Association was by a unanimous vote changed to the British Medical Association the Journal followed suit and from the first volume of 1857 has appeared with the title *British Medical Journal*.

THE FUTURE OF HOSPITALS.

IN our correspondence columns last week Dr. William Collier suggested that the British Medical Association should call a meeting of representatives of the medical staffs of county hospitals, in order to discuss whether it is desirable or possible to continue these hospitals on a voluntary basis, or whether it would be better to hand them over to the State or to the ratepayers to control them. In a footnote to Dr. Collier's letter it was stated that the Association was taking steps to call such a conference, probably on December 16th. It has now been decided that a conference of representatives of the medical staffs of voluntary hospitals shall be held, not on the date mentioned, but on Tuesday, December 21st, at 11 a.m., in London, and we would draw the attention of readers to a Current Note on this subject which appears in the SUPPLEMENT this week. Further particulars of the conference will be given in our next issue.

VENEREAL DISEASE AND THE CRIMINAL LAW.

A COMMITTEE appointed by both Houses of Parliament has recommended that it should be made a criminal offence knowingly to communicate a venereal disease. In their report, which was published on December 2nd, they suggest a clause which provides that "a person who is suffering from venereal disease in a communicable form shall not have sexual intercourse with any other person, or solicit, or invite any other person to have intercourse with him or her." There are various safeguards. Thus, an accused person is entitled to be acquitted if he (or she) proves that he (or she) had reasonable ground to believe himself or herself free from venereal disease at the date of the alleged offence, or if, there being only one witness for the prosecution, that witness is not corroborated in some material particular. Again, in order to give an accused person every chance of disproving a charge, he may undergo medical examination either at the hands of the medical officer of the prison or by his own doctor. This proposal to create a new kind of criminal offence is one which nearly affects the medical profession. In the first place, it is difficult to imagine a case which would not involve the calling of medical witnesses; in the second place, it appears to be certain to raise the question of "privilege" in an acute form. For a prosecution to be successful it must be shown (*a*) that the prosecutor is suffering from venereal disease; (*b*) that this was due to sexual intercourse with the prisoner. The fact of the intercourse can be proved by the prosecutor, whose medical attendant can testify as to his condition. But this is not enough: it must be shown that that condition was due to the intercourse with the prisoner. Of course, if the prisoner refuses to be medically examined or to give evidence, a jury might be entitled to infer his guilt. But it is doubtful whether any prosecution would ever be undertaken unless it were possible to prove affirmatively that the prisoner was in such a condition that he must have communicated the disease. Such proof could only be obtained from his medical attendant. As the law now stands there is nothing to prevent that medical attendant from being subpoenaed on the part of the prosecution; nothing to prevent his being compelled to give evidence, even though he was specially invited by the prisoner to examine him for the very purposes of the case. That an innocent person charged with an offence of this nature would refuse to undergo examination is, of course, extremely unlikely. But he might have venereal disease without being conscious of the fact. In these circumstances, the Committee's proposals, if they become law in their present form, are likely to make the position of the practitioner in his confidential relationship to his patient very difficult. But there is no need to exaggerate the danger. The Committee, in its report, alludes to the fact that a representative of the Ministry of Health said the question whether the criminal law should be invoked was one for the Home Secretary, "and that the provisions of the Government bill might have a certain moral or a deterrent effect." Will it ever be, in practice, anything but a dead letter? Who is going to come forward, while human nature is what it is, to give on oath in a public court the self-incriminating evidence which must be adduced in order to secure a conviction?

THE INVENTOR OF THE TELEPHONE.

IN 1906 Dr. Alexander Graham Bell, the inventor of the telephone, received the honorary degree of LL.D. from the University of Edinburgh, and now, on St. Andrew's Day, November 30th, he has been presented with the freedom of the City, becoming the first "burgess and Guild Brother" of an Edinburgh greatly enlarged in size by its amalgamation with Leith. Dr. Alexander Graham Bell was born in Edinburgh in 1847, and received his education at the Royal High School and the University; he then went to University College, London, and matriculated at the University of London in 1867. His father was Alexander Melville Bell, who gained some celebrity by his scientific analysis of the elements of speech. Through his mother, the daughter of Dr. Samuel Symonds, Surgeon, R.N., there was an early link with the medical profession. Graham Bell, like many other Scotsmen, went to Canada. He took the degree of M.D., and later on became Professor of Physiology in Boston University, becoming, to use his words addressed to the present pupils of the Edinburgh Royal High School, "a good and loyal citizen of the United States for about half a century." The patenting of the invention of the telephone followed in 1876. The Lord Provost of Edinburgh, in conferring the freedom of the city, said: "Though the first rudimentary telephone was constructed in 1861 by Philip Reis of Frankfort, it was not till 1876 that someone devised a practical instrument, which was used both for transmitting and receiving messages, and that someone was Dr. Graham Bell." The story of the happy chance which brought the late Dom Pedro, Emperor of Brazil, to Bell's side at the Philadelphia Centennial Exhibition of 1876, and how he was pertinacious enough to lead an exhausted company of judges to examine and report on one more invention—the telephone—at the end of a hard day's

work, reads almost like a romance. In 1877 the University of Heidelberg, on the 500th anniversary of its foundation, gave to Bell its honorary M.D., more apparently for his invention of the photophone and the telephone probe for detecting bullets in the tissues and organs of the body than of the telephone itself. The writer of these lines well remembers the late Professor Annandale's opening lecture in 1877 from the Chair of Clinical Surgery, to which he had just been appointed on Lister's removal from Edinburgh to London; he then demonstrated the use of Graham Bell's telephone probe for the discovery of stone in the bladder, so that this early success was not long in finding recognition in Bell's alma mater. Another invention, carried out with C. A. Bell and Sumner Tainter, was the graphophone; the laws of flight and the education of the deaf both engaged Bell's attention, and the latter led to great advances in the teaching of speech to the deaf-mute, some of them closely connected with Dr. Graham Bell's own happiness. Within recent years he has invented in his workshop and laboratory in Nova Scotia a submarine chaser capable of travelling under water at the rate of seventy miles an hour. He has, indeed, invented many things; he has written much, and he has justly received many honours and prizes, for he has greatly added to the comfort and well-being of the whole human race, in the department of scientific medicine, as in so many other directions.

INDUSTRIAL FATIGUE.

For the last three years valuable work has been carried on under the aegis of the Industrial Fatigue Research Board (appointed jointly by the Department of Scientific and Industrial Research and the Medical Research Council), and we have received another of the Board's reports, making now almost a dozen, the present report being a *Study of Output in Silk Weaving during the Winter Months*.[1] Investigation into output in the different industries is necessary before the question of the relation of hours of labour and methods of work to both industrial efficiency and to the preservation of health among the workers can be considered, as in the absence of any known physiological or psychological test the only practical index of fatigue in industry at present is that of variation in output. Such an index, however, is only applicable to processes in which fatigue can show itself in reduced output—to those, therefore, in which production depends to an appreciable extent on human effort. In all textile industries many of the processes of manufacture are nearly automatic, and as the pace is set by the machine, such processes are unsuitable for correlating output with fatigue; but in silk weaving the output depends far more on human effort, and is affected to a correspondingly greater degree by fatigue. The present report is therefore one that contains many points of interest. For instance, investigation has shown that there is always a reduced output during hours when artificial lighting is used as compared with the output in daylight, however efficient the artificial lighting may be.

MEDICAL ASPECTS OF WAR TANKS.

It is well known that the tanks that actually saw service in the Great War were as nothing to the tanks that were being designed and were on the point of production, and in their further development it is important that the medical aspect should not be neglected, both as regards the provision of special tanks for medical purposes and as regards the alleviation and prevention of disabilities especially affecting the crews of tanks. In the *Journal of the Royal Army Medical Corps* for October there was an interesting and original article on this subject by Major L. R. Broster, who was D.A.D.M.S. of the Tank Corps during the war. He makes the suggestion that certain types of the larger tanks could be adapted for medical purposes with a dressing-table in the centre of the hold behind the engine, electric light provided, and stretchers and hammocks arranged in tiers capable of holding half a dozen lying cases or twenty sitting cases. As a matter of history we believe that during the battle of Cambrai one fighting tank brought back as many as sixteen wounded, and, during the operations of the Australian Corps at Hamel, altogether about 150 wounded were brought in by the tanks. A specially designed medical tank could, in battle, constitute a movable and protected advanced dressing station, manœuvring in liaison with the field ambulances, and would save enormously the work of and the casualties among the stretcher-bearers. On the other subject, namely, of the disabilities to which tank crews are liable, it has been found by experience that tanks with a full crew on board and closed down for action show, after running a certain time, both the presence of carbon monoxide in the air and a high wet bulb temperature, and the crew develop headache, giddiness, breathlessness, rise of body temperature, vomiting and nausea, sometimes mental confusion, and even collapse and unconsciousness. Some of these symptoms arise partly from a sort of sea-sickness caused by the motion of the tanks, and the symptoms are often aggravated in action by the fumes from the firing of the Hotchkiss and 6-pounders; but from the experiments which have been carried out and which Major Broster notes, the extent of the symptoms depends very largely on the mechanical efficiency of the tanks, and especially on the provision of good and efficient ventilation—points to which special notice must be given, therefore, in any future development of these engines of war.

MOTHER AND CHILD WELFARE IN FRANCE.

During the past twelve years Dr. Vidal[1] has been carrying out at Hyères an experiment in puericulture, or in mother and child welfare, as it is more commonly called in this country. It has consisted mainly in the establishment of a small maternity hospital in connexion with the cantonal hospital, and of a clinic for nursing mothers and their infants under the administrative control of the Board of Charity. He sees no reason why it should not be extended to all cantons and to all such communes as possess a hospital and a Board of Charity. All pregnant women in the communes of the canton of Hyères and also others who were not inhabitants of the place but who were in necessitous circumstances, had the right to come some days before their delivery to be confined in the maternity and to remain there for four weeks afterwards. When she entered, the expectant mother had a strongly alkaline bath and her garments were disinfected, she received necessary linen, was examined by a midwife, and had given to her all the care her state needed. Whilst waiting for her delivery she took several baths and had medical advice; her labour was conducted under strict asepsis. She and her baby did not leave till four weeks had elapsed after the confinement, and she had to promise to present herself and child at the public infant clinic which was held twice a week in the town. The babies were entered on a register kept for the purpose; they were visited, weighed, and cared for by a doctor of the Board of Charity; they might also receive care at their homes and such assistance by way of milk and clothes as they needed till the age of 2 years. During the same time the nursing mothers had the right to medical attention, to drugs, and even to additional food. Even after the age of 2 years these children were to some extent pursued by the beneficent care of the cantonal doctors and hygienists. Dr. Vidal is to be heartily congratulated on the results, for during twelve years there have been 245 deliveries in the little maternity hospital, and no deaths have occurred among either the newborn babies or their

[1] Reports of the Industrial Fatigue Research Board, No. 9; Textile Series No. 3. 1920. H.M. Stationery Office. Price 2s. 6d. net.

[1] *Bull. de l'Acad. de Méd.*, 3 s., lxxxiv, 143-146, October 19th, 1920.

mothers. If this means that no stillbirths took place, Dr. Vidal is surely justified in calling it an extraordinary result, even in so health-giving a place as the Riviera, and in advising that similar small maternities be established in the other 2,915 cantons of France. He is unable to give so precise figures regarding the infantile mortality, but he was certain that it was much less among the children who were watched over at the infant clinics than among the general population of the canton of Hyères—namely, 13.3 per cent. The obstetrical results were undoubtedly remarkable, especially as the amount of prenatal care seems to have been limited to a few days before the births took place.

FROZEN FISH.

FISH is an important article of diet, of which the most is not made in this country, and one reason for this is the difficulty of preserving fish when landed in great quantity during a period of glut so that a normal supply can be made to the markets and the normal price obtained by the industry. The landings of fish in this country are increasing, and on many occasions the price of fish at the ports has fallen below the costs of landing; while fish is eaten "salted" in many countries, it is only owing to the difficulty in procuring it "fresh," and improved methods of preservation would create a demand for "fresh" fish abroad, and increase the export trade. The report[1] by the Food Investigation Board on methods of freezing fish is one of considerable interest. In any consideration of the freezing of flesh the fact of chief importance is that with sufficiently rapid freezing the relations, both chemical and physical, of the constituents are either preserved unchanged or, if they be changed, the altered relations are such as to be exactly reversed when the tissues are thawed. After death the muscle substance undergoes spontaneous chemical change, or autolysis; the effect of freezing upon the course of autolysis in beef and mutton has recently been studied, and it has been found that whereas if the flesh has previously been slowly frozen by air-freezing the rate of autolysis is higher and the chemical breakdown greater than in fresh unfrozen meat. In flesh which has been very rapidly frozen and then thawed, autolysis is precisely similar to that of fresh flesh which has never been chilled or frozen. The internal chemical and physical qualities of dead flesh can therefore be preserved by sufficiently rapid freezing. In commercial practice other factors must be considered also; in regard to preserving fish the texture, flavour, external appearance, and keeping properties are of importance. The present report is not exhaustive, but in it are discussed the various methods of freezing for dealing with gluts of fish, such as herring. The process of freezing in brine—which takes only one-tenth to one-fifteenth of the time needed to freeze in air—is recommended on the ground that it is the most rapid and gives the best preservation, without deterioration of appearance or flavour. The brine, it may be pointed out, is used in place of water, not for the purpose of preserving or pickling the surface of the fish, but in order to lower the freezing point of the water, and even strong brine does not cause the fish to retain a salt flavour.

CRIMES OF VIOLENCE.

LORD JUSTICE ATKIN, in an address which we printed a month ago, held it most important that a medical man should be able to form a just opinion when called upon to give evidence in cases of murder and other crimes of violence. In charges of wounding, he said, the main issue to be determined was whether the act was felonious or not—an issue depending very largely upon the medical evidence. Sir Richard Atkin spoke also of other perplexing situations in which medical men may find themselves when brought into relation with the administration of the criminal law, his object being to emphasize the great value to the doctor, no less than to the lawyer, of a working knowledge of medical jurisprudence. He was discretion itself in what he said about the teaching of forensic medicine to medical students; and, indeed, the difficulty of fitting this important subject into the crowded curriculum is plain to all. We would only observe here that in our experience it depends almost entirely on the lecturer whether students throng or shun the courses of instruction in this subject. Dr. B. H. Spilsbury's address to the Abernethian Society at St. Bartholomew's Hospital last week is a case in point; the great theatre was packed with students who followed every word with eager interest. His subject—the medical investigation of crimes of violence—is one of which he is an acknowledged master. The basis of his discourse was the need for careful and accurate observation, not only of the victim, but of all the circumstances and surroundings, when first approaching a supposed crime of violence. In investigating such cases trained powers of observation and good common sense are essential qualities. The kind of investigation needed was brought home to the audience by a number of illustrative cases, ranging from cut throat and gunshot wounds to that of the man Smith who murdered three wives by drowning them in baths. Dr. Spilsbury showed how it is often possible for the expert to reconstruct the crime, and so build up an hypothesis for the prosecution, and he expressed the hope that in the future more would be done in this way by co-operation between medical men and trained police officers. The cases he described in exact detail from personal knowledge illustrated some of the methods of investigating crimes of violence, and the various types of problems that may be encountered. Without skilled medical advice counsel for the Crown would often be at a loss when cross-examining a prisoner who elects to give evidence; but in this matter, as in his testimony, the medical witness must, of course, play a wholly impersonal part. Dr. Spilsbury insisted—and this is a point that needs emphasis—that a prisoner is found guilty in consequence of his own criminal acts: it is not the medical evidence that hangs the murderer, but his own guilt established to the satisfaction of the court by the aid of medical witnesses. In a criminal trial the medical witness gives evidence as to facts only; he is there to assist the court as an advocate of truth. It is therefore of the utmost importance that he should know what facts to look for, how to set about the investigation, and how to interpret the facts he observes.

MEDICINE IN THE "ENCYCLOPAEDIA OF RELIGION AND ETHICS."[1]

THE appearance of the eleventh volume of the monumental work known as the *Encyclopaedia of Religion and Ethics* is really an event in the publishing world. In these days of dear paper and expensive printing it is something of a feat for Messrs. T. and T. Clark of Edinburgh to have continued during, and now after, the war to issue the successive instalments of Dr. James Hastings's magnum opus. To the present volume, which runs from Sacrifice to Sudra, and has 916 double columned pages, over 170 writers of eminence contribute, and although only a few have medical qualifications, a great many of them deal with medical, or semi-medical, matters. For instance, Dr. W. Crooke writes upon saliva, and tells most interestingly of the various beliefs which have assembled themselves round this secretion—those associated with it as a part of the personality, as a cause of conception, for the lustration of children, as medicinal or poisonous, as a cure for gout and hydrophobia, and as a protection against various evil influences.

[1] Food Investigation Board, Special Report No. 4. 1920. H.M. Stationery Office. 1s. 6d. net.

[1] *Encyclopaedia of Religion and Ethics.* Edited by James Hastings, with the assistance of John A. Selbie, M.A., D.D., and Louis H. Gray, M.A., Ph.D. Vol. xi, Sacrifice—Sudra. Edinburgh: T. and T. Clark; New York: Charles Scribner's Sons. 1920. (Pp. xx + 916.)

Dr. George A. Barton deals with salutations, and shows how health considerations enter into so many of them; and Miss Czaplicka gives information regarding the anthropology of the Samoyeds. Other articles of medical interest are those on the Sannyasi, with their curious death rites; on Satanism and its strange psychology; on Satyrs, Sirens, and Silenoi; on the Greek scapegoat, or pharmakos; on the Scythians and their peculiar disease; on secret societies and their initiation rites; on the Skoptsi Sect in Russia, with its special form of mutilation; on sense and sensibility; on serpent worship and its meaning; on Shamanism and the medicine men; on the Siamese and their medical customs; on sin and its interrelation with disease; on the unpleasant custom of sin eating; on the skin, on stigmata, and on subconsciousness. The article on sex is full of interest, and deals with many problems, including that of the "free-martin"; there is, however, no reference to the late Dr. Berry Hart's numerous contributions to the study of the sex-ensemble, hermaphrodism, and the like—rather a serious omission.

UMBILICAL DIPHTHERIA IN THE NEWBORN.

SCHÖNFELDER describes an epidemic of umbilical diphtheria in a maternity hospital in Christiania.[1] Although the first case was admitted to the Ullevaal Fever Hospital on account of the mother, who was admitted with diphtheria of the fauces, the diagnosis of umbilical diphtheria was not made till after death, when a bacteriological examination proved positive. The infant did not, therefore, have the benefit of antitoxin treatment, and this was the only fatal case out of a total of 33. The author classifies his cases according to the severity of the disease, and notes that in the 10 cases in the first class the inflammation of the umbilicus was so slight that it would probably have been overlooked had not the practice been adopted during the epidemic of making a bacteriological examination of the umbilicus of every infant born. These cases might be regarded more or less as "carriers," but the precaution was taken of giving them antitoxin. It was therefore a moot point whether they would have developed into clinically demonstrable cases of diphtheria had antitoxin been withheld. In the second class, which included 19 cases, the inflammation was more severe, but there was no typical pseudo-membrane covering the ulcers. In the third class there were only 2 cases, in both of which the umbilicus formed a prominent suppurating mass. The fourth class also contained only 2 cases; one was the fatal case already referred to, the other showed profound toxaemia, but the injection of 6,000 units of antitoxin effected a rapid recovery. The author correlates the frequency of umbilical diphtheria during 1919 in both Christiania and Bergen with a marked increase in the frequency of wound diphtheria in other parts of the body, and he notes that this correlation was also observed in 1860 during an epidemic of diphtheria in Norway. In 1919 Axel Looft reported a small epidemic of umbilical diphtheria at a maternity hospital in Bergen, with a total of 5 cases. Carl Looft[2] supplements this report with an account of 2 cases of diphtheria in the newborn. In the first case the infant's snuffling was not taken seriously by the parents until it had lasted about three weeks. Then extensive polyneuritis developed, with paralysis of all four limbs, the muscles of the neck, and the lower facial muscles. Had it not been for the bacteriological examination this case, which terminated in death, would probably have been labelled as one of Heine-Medin's disease. The author believes this case to be almost unique, and the only approximately similar case on record is one described by Hennig, whose patient developed umbilical diphtheria when 7 days old, exhibiting various paralyses seven days later.

[1] *Norsk Mag. for Laegevidenskaben*, September, 1920.
[2] *Medicinsk Revue*, February, March, April, 1920.

INTERNATIONAL UNION AGAINST TUBERCULOSIS.

THE permanent constitution of the International Union against Tuberculosis, set up in Paris last October, is now being drafted by the following Provisional Executive Committee: Sir Robert Philip, President; Dr. Dewoz (Belgium), Vice-President; Dr. Gerald Webb (United States), Professor Calmette (France), Professor Cantacuzène (Rumania), and Professor Léon Bernard (Paris), who is the honorary secretary. The following conclusions, unanimously approved by the Paris Conference, have been circulated to all national associations within the International Union against Tuberculosis: (1) The medical profession and the laity require further education in the prevention of tuberculosis. (2) Statistics are required as to the amount of active and of latent tuberculosis in different countries, and in relation to the age, sex, occupation, and social conditions of various groups of the population. (3) Comparative figures should be obtained as to the mortality and clinical varieties of tuberculosis in different countries. (4) An adequate number of dispensaries should be established, staffed by specially trained physicians, nurses, and health visitors. (5) Near urban centres provision should be made for the isolation of advanced cases and for the treatment of early cases. (6) Infant clinics, open-air schools, and foster homes for healthy children born of tuberculous parents are also required throughout the world.

WE regret to have to record the death, on December 2nd, after a long illness, of Sir Frederick Taylor, Bt., M.D., Consulting Physician to Guy's Hospital. He was President of the Royal College of Physicians of London from 1915 to 1918.

THE Minister of Health has appointed Dr. C. E. S. Flemming, of Bradford on-Avon, and Dr. E. H. Houlton, of Mansfield, to be members of the Consultative Council on Medical and Allied Services, in succession to Dr. A. Fulton and Dr. A. Linnell, who resigned from the Council on taking up appointments under the Ministry.

Medical Notes in Parliament.

Ministry of Health Bill.

THE consideration of the Ministry of Health (Miscellaneous Provisions) Bill was continued in Grand Committee on December 1st. It will be remembered that on the previous day Clause 11 had been under discussion and progress had been made to the point that the first portion of the clause had been amended at the instance of Dr. Addison so that it should read as follows:

"(1) The council of a county shall, on such terms and conditions as may be approved by the Minister, have power—

"(*a*) To acquire by agreement with any Poor Law authority any existing Poor Law hospital or infirmary belonging to that authority within their area and to maintain the same as a hospital for the treatment of illnesses and diseases generally, or for the treatment of any particular illness or disease, or any particular class of illnesses or diseases; and"

Mr. Trevelyan Thomson now moved to add the words:

"including the care and treatment of persons suffering from mental disorder which is incipient in character and of recent origin."

He said that the amendment was designed to make sure that the few hospitals which would come under Clause 11 after the whittling down, should have the opportunity of dealing with cases of incipient mental disease indicated in Clause 10.

Dr. Addison offered the assurance that incipient mental disorder was "certainly an illness or disease covered by the words of the clause." The amendment was therefore, by leave, withdrawn.

Mr. Ormsby-Gore then moved to add the words:

"to make agreements with boards of guardians providing for the reception, maintenance and treatment in Poor Law hospitals or infirmaries of any class of sick persons for whom the council is empowered by law to provide indoor maintenance and treatment."

He proposed this not as an alternative, but as an addition, so as to provide, that where a county council and a board of guardians failed to agree to the handing over of Poor Law hospitals to the county council, the county council should be able to maintain patients in the Poor Law hospitals.

Dr. Addison said he was unable to accept this amendment, as he thought it would stultify the decision already made. On a division the amendment was rejected by 16 votes to 7.

Colonel Leslie Wilson (for Dr. Addison) then moved the deletion of the subsection (*b*), under which county councils were to have been empowered to contribute to voluntary hospitals. Several members argued against the withdrawal of the provision; on the other hand, Earl Winterton thought that all who had to do with voluntary hospitals would be grateful to Dr. Addison for having adopted what they believed to be the only fair and reasonable way of dealing with the situation—namely, a fair, impartial and exhaustive, but quick inquiry into the whole matter. Sir Ryland Adkins said that those who were concerned in local government were increasingly convinced, the more they went into the problem of the correlation of health services, that voluntary hospitals such as those which flourished in English county towns must be retained as the proper crown and coping stone of medical services in their areas. For many years the county hospital had been the one thing in which the county borough and the county had been united without friction, and he welcomed the dropping of this particular section. On a division, the subsection was deleted by 17 votes to 10. The deletion of subsection (*c*) followed consequentially.

The Committee then discussed Subsection (*d*), under which it is proposed that the county council shall have power

"To establish and maintain, or to contribute towards the cost of, or otherwise aid in establishing or maintaining, an ambulance service for dealing with cases of accident or illness within their area."

Mr. Guest moved to leave out the words "accident or," with the intention of proposing later to enlarge the definition of illness so as to include "any case of accident or other cases requiring surgical treatment, and any case of confinement in respect of childbirth." He recalled that the original provision for maintaining hospitals was for "the treatment of illnesses and diseases," and argued that the expression should embrace accidents. He feared that by the use of two terms in the ambulance subsection the function of the hospitals might be limited.

Colonel Leslie Wilson, for the Ministry of Health, agreed to the deletion of the words "accident or," and to consider before report whether a later amendment defining "illness" was required; but he could not accept Mr. Guest's amendment offhand.

At the instance of Dr. Fremantle, Dr. Addison accepted amendments to enable the ambulance service to be used for dealing with cases either within or without the area of a county authority, instead of being limited to within the area. Illness, Dr. Fremantle remarked, knew no geographical boundaries, and it should be made quite clear that these ambulances were available to serve a hospital rather than a county area.

Mr. Thomson next moved, as an addition, that the county authority should have power to establish and maintain hostels for the treatment of sufferers from incipient mental disorders. He urged that there were thousands of ex-service men suffering from such trouble whose cases could not be met by private homes. Colonel Wilson, for the Government, deprecated the reopening of the question which had been discussed on Clause 10, and he reminded the Committee that the Ministry of Pensions provided for "shell-shock" patients. The amendment was rejected by 20 votes to 10.

Dr. Fremantle, on behalf of Dr. Raw, moved the following new subsection:

"Where on the application of the council of a county the Minister is satisfied that there is a deficiency of hospital accommodation in the area of the council and that any Poor Law hospital or infirmary could be made available for meeting such deficiency, he may, in default of agreement under this section between the council and the Poor Law authority concerned, after giving the authority an opportunity of being heard, by order require the authority to transfer the hospital or infirmary to the council on such terms and conditions as may be prescribed in the order. Any such order may contain such provisions with regard to the vesting of the hospital or infirmary in the council, and such consequential and supplemental provisions as the Minister may think necessary, and any order so made shall be binding on the authority. Provided that any such order shall be provisional only and shall be of no effect until conferred by Parliament."

He submitted that having regard to the waiting list of 28,000 persons for hospital treatment, it might occasionally be advisable or necessary to force the hands of the guardians in this matter. The interests of the Poor Law authorities were, in his opinion, safeguarded by the order being provisional only, and of no effect until confirmed by Parliament.

Colonel Wilson, on behalf of the Government, accepted the amendment as entirely reasonable. Mr. Ormsby-Gore protested against the proposal, which he said would be viewed with indignation by Poor Law authorities throughout the country.

Considerable discussion took place as to the meaning of the final sentence. Colonel Wilson, with the object of reassuring Mr. Ormsby-Gore, stated that no transfer could take place until Parliament had passed a provisional order bill; but Sir Henry Craik thought the drafting of the amendment unsatisfactory, and its acceptance would be contrary to the undertaking given by the Minister of Health. Sir Ryland Adkins believed that the application of the proposal would be exceptional, and that the reference to Parliament would adequately protect Poor Law authorities. Colonel Wilson said that the terms employed were the common form for all such cases of reference to Parliament. On a division the proposal was carried by 20 votes to 6.

Mr. Ormsby-Gore moved to leave out Subsection (2), the object of which is to allow two or more counties to combine for putting into force the powers given under the clause. After a brief discussion he agreed, however, to withdraw this amendment, and the subsection was then altered so that the powers should not include supplying but should be limited to maintaining.

Colonel Wilson (for the Government) moved the insertion of the following new subsection, which was agreed to.

"3. The council of a county may, with the approval of the Minister, delegate to any joint hospital board or, in the case of the London County Council, to the managers of the Metropolitan Asylums District, the management on their behalf of any Poor Law hospital or infirmary acquired by them under this section."

Mr. Guest moved to omit the next subsection, designed to give to a county council the same power of recovering expenses of maintenance as a local authority has under Section 132 of the Public Health Act, 1875. This lays down that any expense incurred by a local authority in maintaining in a hospital a patient who is not a pauper should be deemed a debt from such patient to the local authority, and recoverable within six months after his discharge.

Dr. Addison said the question was complex, but they had to deal with facts as they were. Those in charge of the voluntary hospitals thought it would help their position if they had a system of payment by patients where the patients could properly be asked to contribute. In his opinion that was a fair and reasonable proposition. If that course were taken, then the distinction which Mr. Guest sought to make would not arise, because the same proceeding would apply to both classes of institution. Moreover, Section 60 of the Public Health Amendment Act, which amended Section 132, provided for recovery of the cost of maintenance in any hospital from any patient who was not a pauper, and where the local authorities were satisfied that the circumstances warranted it. Surely if it was right and proper to charge a person who went into a Poor Law institution, *a fortiori* it was fair and right to charge people who were able to pay. It was only proposed to apply in the enlarged application of this scheme the principles now existing. The alternative was to say that no charge should be made to anybody, and that he was not prepared to recommend.

After further debate the amendment to reject the subsection was defeated by 24 votes to 6.

Dr. Addison later moved a drafting amendment so as to bring the definition of "pauper" within Section 60 of the Public Health Acts Amendment Act, 1907. He moved another addition to enable the Minister to order that the expenses of a hospital under the clause might be charged to a part of a county instead of to the county as a whole. Mr. Ormsby-Gore inquired whether it was necessary to retain the following subsection, which was framed to give a county council power to borrow money for the purposes of the clause. Dr. Addison thought it would be necessary to continue this power. Suppose, for example, the county council were to provide extra accommodation in connexion with any existing institution, they would have to obtain sanction for that. The question whether it should be done out of loan and not financed out of current income would depend upon how big the matter was. All these cases must be judged on their merits. The smaller ones could be financed out of current income, for the bigger ones the expense would be met by borrowing.

Earl Winterton asked whether the section would empower a council to borrow money for a building programme; Dr. Addison replied he thought not. The provision was confined to an existing institution, and clearly building other institutions would be beyond the powers which the bill conferred. That was a different thing from putting on a room or making the place capable of being run as an institution. That, clearly, was all that was implied in the term "existing institution." Dr. Addison further said he was advised that as the clause stood the council would have to provide extra beds and equipment out of current revenue. It might be that they would have to alter some buildings to make them suitable. Alterations of that kind would have to be met out of current revenue. He was willing to give an undertaking that such things would have to be provided out of current revenue.

On a further assurance by Dr. Addison that he would get the Law Officers' opinion, and if necessary would produce limiting words on report, a motion by Earl Winterton to delete the subsection was withdrawn. Another new subsection was then added to indemnify any persons who might suffer pecuniary loss by the transfer of Poor Law infirmaries from the one authority to the other.

On the main question that Clause 11 as amended stand part of the bill, Sir Henry Craik expressed the view that it would not tend to benefit hospital management or the great interests of the medical profession; Mr. Gwynne regretted that the Poor Law authorities had not apparently been consulted; Mr. Hopkinson thought it would have been better if the clause had not been pressed forward until the Committee of Inquiry into the hospital question as a whole had made its report. The clause was agreed to by 17 votes to 7.

On December 1st the clause to restrict the sale of clinical thermometers (except for export) to thermometers which had been tested, approved, and marked in accordance with Regulations made by the Minister, was carried by 19 votes to 14, after considerable discussion.

On appeal by Dr. Addison, various new clauses standing

for submission by private members were not pressed, the understanding being that they could be brought up on report in the House of Commons.

The Tuberculosis Bill.

In view of the fact that the Tuberculosis Bill cannot be proceeded with this session, Dr. Addison has issued a circular to clerks to county councils in England and Wales intimating that the transfor of powers under the Insurance Act, which was under the Health Ministry Amending Act of last summer to take place on December 31st, will be postponed until May 1st next. This will give time for a Tuberculosis Bill to be passed in the new session.

Grants to London Medical Schools.—Mr. Gilbert asked, on November 24th, which of the London medical schools received grants in aid of medical education during the years 1918 and 1919 respectively; how much was granted to each school; whether any of the medical schools had adopted the clinical unit system advocated by the Advisory Committee on University Grants, and, if so, what were the financial details.

Medical School.	Academic Year 1918-19.	Academic Year, 1919-20.	
		Block Grant.	Clinical Unit Grant (if any).
	£ s.	£	£
Charing Cross Hospital ...	750 0	1,000	—
King's College Hospital ...	633 10	700	—
London Hospital	5,200 0	6,000	—
Royal Free Hospital	3,576 0	4,000	—
St. George's Hospital	650 0	700	—
St. Bartholomew's Hospital	4,260 10	5,000	5,750
St. Mary's Hospital	1,700 0	1,900	—
St. Thomas's Hospital ...	3,800 0	4,500	2,330
University College Hospital	3,375 0	4,000	5,570
Westminster Hospital ...	290 10	300	—
London School of Tropical Medicine	985 0	1,100	—
Middlesex Hospital	—	2,000	—
Royal Dental Hospital ...	—	1,000	—
Total	25,220 10	32,200	13,650

Clinical units were established for the academic year 1919-20 at the medical schools of St. Bartholomew's (medical and surgical), St. Thomas's (surgical), and University College Hospital (medical and surgical), and special additional grants were paid to those schools shown above.

The Dentists Bill.—Dr. Addison said, in reply to questions on December 1st, that it was hoped to introduce this bill before the end of the session in sufficient time for it to be printed and circulated. He regretted that more could not be done for it.

Milk and Dairies Bill.—Dr. Fremantle asked, on December 1st, if, in view of the need of preventing tuberculosis and the delay in putting into operation the Milk and Dairies (Consolidation) Act, 1915, he would take the second reading of the Milk and Dairies Bill in the current or the following week. Mr. Bonar Law regretted that it would not be possible to find time for the further stages of this bill this session. Dr. Fremantle asked whether the Government would give any assurance that the matter would be dealt with early next session, seeing that it was one of life and death. Mr. Bonar Law said that would be carefully considered.

Deputy Commissioners of Medical Services.—Asked by Commander Young, on November 24th, whether he would consider the desirability of abolishing the office of Deputy Commissioner of Medical Services and delegating the work to local committees, as before October, 1919, Major Tryon replied that the Deputy Commissioner was responsible both for the machinery of medical boards and the examination of pensioners, as well as for the supervision of their medical treatment. The post served the interests both of economy and of sound administration.

Pensions Department: Hospital Staffs.—Mr. Macpherson stated, on December 1st, on inquiry by Sir H. Nield, that the administrative and clerical staffs employed in London and the Regions were reduced by 175. The staffs of hospitals and institutions increased during the month by 370. A large hospital at Ashhurst, with a staff of 218, was taken over from the War Office, but this involved no extra charge on public funds. The balance of the increase was made up of small additions to numerous other hospitals.

Concurrent Treatment and Training.—In reply to Mr. Grundy, who put it that disabled men were being prevented by the increased cost of living from taking concurrent treatment and training under the present scale of allowances, Mr. Macpherson on December 2nd said that the Government had recently considered a proposal for an addition to pensions and allowances, and had decided that no increase could be sanctioned at present. He had no information to support the view that disabled men were either unwilling to undertake, or were failing to complete, courses of concurrent treatment and training on the ground that the allowances were inadequate. Mr. Macpherson promised, however, to consider sympathetically any cases of the kind indicated brought before him; many hundreds of men were waiting for the advantages of the treatment.

Hospitals Abroad.—Mr. Swan asked the Minister of Health, on December 2nd, whether the hospitals and infirmaries of Denmark were State owned and controlled, and whether any charge was demanded from those who needed treatment; and whether such services were efficient. Dr. Addison replied that there was one State hospital in Denmark—at Copenhagen—and a number of voluntary hospitals provided by religious and philanthropic bodies, but the majority of general hospitals were provided and controlled by the local authorities. A scale of charges was laid down for each hospital, varying according to the accommodation provided. Payment was made for all patients, either by the patient himself, by the sickness society of which he was a member, or by the Poor Law authority. The information available was not sufficient to enable him to express any opinion as to the efficiency of the hospital service.—Sir J. D. Rees, on December 2nd, asked whether large subscriptions were obtained in America from trade unions towards the upkeep of voluntary hospitals. Dr. Addison replied that he had no information on the point but would have inquiry made.

Borough Coroners' Remuneration.—Asked by Captain Bagley, on November 24th, whether the remuneration of borough coroners had remained unaltered for twenty-three years under limitation by law, and whether the Government would pass a short bill this session to adjust the pay to present-day conditions, Mr. Shortt said there had been no change in the law on this point for a much longer period, but it was not possible to legislate on the matter during this session.

Dangerous Drugs Act.—Mr. Gilbert asked, on November 25th, whether all the Regulations under the Dangerous Drugs Act had been issued and were now in operation. Mr. Shortt said that Regulations were in preparation and would soon be issued.

Empty Beds in Poor Law Institutions.—In answer to Sir Cyril Cobb, on November 24th, Dr. Addison stated that the estimate of 30,000 empty beds in Poor Law infirmaries in England and Wales was based on information obtained in the last few months. The total number of empty beds of all kinds in Poor Law institutions was much larger. There were approximately 13,000 empty beds of all kinds in London and 89,000 in the rest of the country on January 31st, and 14,000 in London and 91,000 in the rest of the country on July 31st.

Medical Officers in Mesopotamia and Persia.—Lieut.-Colonel Spender Clay asked, on November 17th, whether officers of the Indian Medical Service now stationed in Persia have been in that country for over five years without leave, and whether steps would be taken to replace them without further delay. Mr. Churchill replied he was not clear whether the question referred to leave to the United Kingdom or to India. It was possible that a certain number of officers of the Indian Medical Service in Mesopotamia and Persia had not had leave to the United Kingdom during the period mentioned. Everything possible was being done to relieve officers who had served for lengthy periods without leave; but, owing to the shortage of officers of the Indian Medical Service and to the greatly increased number of officers of that service required for duty in garrisons other than India, no promise could be given to relieve any particular officer. The grant of leave to India was a matter for the authorities under whom the officer might be serving, and he was sure that they were doing all that was possible in the prevailing conditions.

Industrial Diseases.—Mr. William Thorne asked, on November 16th, whether the Home Secretary was aware that the vibration of the portable drills introduced in lead mines during the past few years was such as to create paralysis of the shoulder muscles; that a number of men suffered from neuritis due to working the hand drill; that the Non-ferrous Metal Council agreed that the disease should be brought within the schedule of industrial diseases, and that compensation should be given to men suffering from paralysis, "beat" hand or knee, and silicosis. Mr. Shortt replied that he had no information of the kind suggested in the first two parts of the question, and as for the third he understood that the Non-ferrous Mining Interim Industrial Committee, to which Mr. Thorne doubtless referred, had not come to any agreement, there being a conflict between the employers' and the workers' representatives. If the hon. member would furnish him with particulars of the cases of paralysis or neuritis attributed to the use of drills, and also of any cases of silicosis among lead miners, he should be glad to make inquiry into the matter. "Beat" hand and miner's "beat" knee were already scheduled as industrial diseases under the Workmen's Compensation Act, 1906.

Dr. Addison is unable to say whether there are any discharged sailors or soldiers suffering from loss of memory or other nervous disability in pauper lunatic asylums or Poor Law institutions. He is making further inquiries.

The Board of Control is considering whether there should be posted up in the waiting rooms of all public asylums Section 79 of the Lunacy Act, 1890, which gives a relative or friend of a pauper patient the right to claim that the patient shall be delivered to their care on their undertaking responsibility that he shall not harm himself or others, or become chargeable to any union.

The accounts of the Metropolitan Asylums Board show an increase of 174 per cent. on salaries and wages accounts as between 1918-19 and 1920-21. The explanation given is general increase in work, increase in numbers of hospitals in use, increase in the number of fever patients, and adoption of a forty-eight hour week, which compels the employment of more persons.

The Government has decided not to proceed with the Temporary Provisions Bill for dealing with the liquor trade, but to introduce a measure next session.

The University Grants Committee is now considering its report and hopes to submit this to the Treasury early in the new year.

Major Tryon states that service pensioners are allowed to choose any limb in the Ministry's approved list which is suitable from a surgical point of view

AUSTRALASIAN MEDICAL CONGRESS.

WE have already reported (November 13th, p. 763) the opinions recorded by the Australasian Medical Congress, during its eleventh session in Brisbane last August, with regard to the white colonization of tropical Australia. We propose now to give some account of other resolutions passed by the sections and confirmed at the final plenary meeting of the Congress; many of them illustrate the conflict of two principles—that which we may call the voluntary principle on the one hand, and the principle of State control on the other. Before the war Germany, in some of its aspects, had developed the socialist idea of a well ordered State to a greater degree than any other country; it is curious that after the war the countries which broke the power of this system should seem bent on introducing the selfsame ideal of a disciplined State under the guise of reconstruction. Probably either principle, carried to its logical conclusion, would be unendurable by the human race, so that compromise is necessary. In adjusting the method of compromise to the needs of the moment there is a play of action and reaction; and in Australia at the present time the action of the supporters of State control seems to be in the ascendant.

The Section of Naval and Military Medicine and Surgery in the Congress was struck by the success of military public administration during the war, differing herein perhaps from some of our civilian critics at home. The Section expressed the opinion that the principles which underlay this success can be adapted to civil life, and proceeded to lay down lines for this adaptation. It is proposed that the Central Commonwealth Authority shall direct public health activities through an expert medical staff and co-ordinate action and legislation between the States. It is suggested that the greatest possible amount of autonomy should be granted to local health authorities, which should be encouraged in initiative and self-reliance. It is hoped to organize the medical profession so that every member has his part in the public health organization, and so that the closest co-operation may be ensured between administrative medical officers and medical practitioners. Research is to be advanced by the central authority, and directed along proper channels. The community is to be educated into developing a public health outlook, a start being made by enforcing a field service regulation under the Commonwealth Defence Scheme, that "the study of sanitation and the preservation of health is incumbent on every officer and soldier." Further, it is proposed that under the defence scheme note should be kept of those medical officers best suited to perform efficiently the work of examination of recruits; and that whenever it becomes necessary to enrol men again these medical officers shall be withdrawn from practice, and become whole-time officers for medical examination.

The Section of Public Health and State Medicine advocated a complete system of medical inspection of all school children to be conducted by a staff of full-time medical officers. Treatment to follow inspection is to be provided, but it is suggested that it should be carried out as far as possible by the regular medical attendant. Various other whole-time officials are suggested for conducting campaigns for eradicating mosquitos and hookworm; and the establishment of laboratories, of a commission for making a really effective campaign of preventive medicine, and of reservations for wild animals, was demanded.

The Section of Obstetrics and Gynaecology urged the Federal and State Governments to make the most up-to-date methods of prophylaxis against venereal disease as widely known as possible, and to make such measures available where possible. This Section also recommended the establishment by the State Governments of Central Midwives Boards, and the compulsory notification of puerperal septicaemia. It is of opinion that the maternity bonus, being frequently misapplied by the recipients, should be used, presumably by the Government, to pay for efficient nursing and medical attendance.

The Section of Diseases of Children expressed dissatisfaction that there are no State regulations to enforce the provision of fly-proof closets, and to prohibit the use of lead paint on verandah railings.

The rest of the resolutions are of more domestic interest, and need not detain us, but it seems clear that the Australian medical profession desires to see State control extended. Those in whom admiration for voluntary effort still lingers may, perhaps, wonder how far the public health organization proposed is compatible with the self-reliance on the part of the community mentioned in one of the resolutions, and whether better results might not be obtained in the end by the gradual education of the people in knowledge of matters appertaining to health. However, it is necessary, as we have said, to effect a compromise. Where the people can be shown to be acting in a manner not merely deleterious to their own health but dangerous to the health of others, it must be agreed that there is ground for State interference. The absence of fly-proof closets is no doubt a fruitful source of typhoid, dysentery, and summer diarrhoea, so that a case has been made out for State compulsion in the provision of these conveniences, just as the pollution of streams used for the supply of water to the community is an offence. With regard to medical treatment, we believe that the majority of the medical profession in the British Isles is still averse to the multiplication of whole-time medical officers.

Is it not possible that one of the chief guides to State interference in, and regulation of, the habits of the people should be the amount of harm done by individuals to others, that the evidence of the harm done should be clear, and that in every case the mildest methods of restricting the danger should be tried before embarking on measures which seriously interfere with the freedom of the people, put the community to excessive cost, or involve the expenditure of an unreasonable amount of time and energy? Is it quite certain that in the hasty pursuit of an A1 standard of health by means of State interference the people will not lose something of their independence and virility, and cease to feel a proper sense of responsibility for themselves, their children, and their neighbours? The demand for State control is frequently based on what are called the rights of the people. We venture to urge that some portion of the control might be dropped if it were possible to instil into the people some better notion of their duties.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last two meetings of the Committee fifty-eight cases were considered and £687 voted to forty-nine of the applicants. The following is a summary of some of the cases relieved:

Widow, aged 66, of M.R.C.P.Edin. who died in 1905. Was left at husband's death with house which has since been mortgaged and is in bad repair, leaving net rent of £32 per annum. Pays £27 per annum for one room. Finds it impossible to obtain employment. One son, aged 36, who is married, with two children, unable to assist her. Voted £18 in twelve instalments.

Widow, aged 36, of L.S.A.Lond. who died in 1920. Applicant requires a little assistance until her late husband's estate is realized. Two children, one aged 3 years and the other 10 months. At present residing with father. Before marriage was a hospital sister. Voted £10.

Daughter, aged 68, of M.R.C.S.Eng. who died in 1870. Suffers from chronic chest trouble. Living with an old nurse. Only income £20 per annum from the Royal Hospital for Incurables. Rent 3s. 6d. per week. The Fund made grants of £10 in 1890 and 1895. Voted £18 in twelve instalments.

Daughter, aged 62, of M.R.C.S.Eng. who died in 1891. Suffers from deafness and bodily weakness. Income an annuity of £22 18s., and during the last twelve months £8 by painting miniatures. Does not pay rent as she lives with relatives. Voted £10 in two instalments.

Daughter, aged 69, of M.R.C.S. who died in 1833. Applicant suffers from cancer and has had six operations; not strong enough to undergo another, which is necessary. Income from other charities £35, and £13 earned by reading to an old lady. Rent 8s. 6d. per week. Voted £18 in twelve instalments.

L.R.F.P.S.Glas., aged 73, married. Both himself and his wife, aged 88, have suffered from ill health for some years. The applicant first suffered from an ulcerated leg which prevented him earning, and all savings were spent. He has now developed cancer of the tongue and is in a desperate condition both in health and financially. Wife is also bedridden, and their only income is the old age pension which both receive. Granted £5 a month.

M.D.Lond., aged 51. Married, wife in mental home. There are two children away at school and provided for. The applicant has suffered from paralysis for over ten years and is quite incapacitated. His net income is only £64 a year and he requires someone to look after him. Helped four times, £86. Granted £26 in twelve instalments.

The Committee also agreed to give each annuitant a Christmas gift of 30s. This will require £266, and a similar gift to over 100 of the grantees. The Honorary Treasurer will be pleased to receive special donations for these gifts which do much to assist the recipients to have a happy Christmas, especially in these days of high prices.

The following very sad case is especially brought to the notice of our readers:

Dr. McA. is 75, has hemiplegia and has now developed sarcoma of the jaw. He and his wife, who is 86, draw old age pensions, which with the help from the fund enables them to exist. Comforts are also necessary, and it is hoped that some who read this will send a donation to the Treasurer. A medical friend at Norwood will see to the proper distribution of any gift.

Subscriptions to the Fund may be sent to the Honorary Treasurer, Sir Charters J. Symonds, at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is overwhelmed, in these days of exorbitant prices for clothing and household necessaries, with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

Scotland.

THE HEALTH OF EDINBURGH AND GLASGOW.

THE almost simultaneous appearance of reports[1] on the health of Edinburgh and Glasgow by their respective medical officers of health suggests the making of a comparison between the conditions prevailing in these two large centres of population not far apart as to distance but differing widely in their characters as cities. Since, however, Dr. Chalmers's report on Glasgow covers six years (no reports having been issued during the war years), whilst Dr. Williamson deals with only one year of Edinburgh's health affairs, it will be better to restrict the comparison to a few leading matters, leaving the fuller consideration of the subject till a more normal year's results is available.

It is no fortuitous occurrence that both reports give a prominent place to maternity and child welfare. The coming into force of the Notification of Births (Extension) Act of 1915 made schemes for the saving of the lives of expectant mothers and young infants highly desirable and greatly facilitated their coming into action. Both Glasgow and Edinburgh had good material to work upon in the presence in their midst of admirable institutions already doing good work of the kind called for. There were differences in the two cities—for instance, Edinburgh had had beds for pregnancy or antenatal cases for some years, whilst in 1916 Dr. Chalmers reported the absence of any such "antenatal ward" in Glasgow; but, on the other hand, Glasgow earlier set about an inquiry into the causes of stillbirths than Edinburgh, and Dr. Chalmers is able to report on this important matter from material investigated between February, 1917, and April, 1920. These differences are in process of being smoothed out, for Glasgow got its antenatal ward with 23 beds and started its antenatal dispensary in August, 1918, and Edinburgh has been carrying on an inquiry into stillbirths since 1919. The Edinburgh report gives a separate and a prominent place to the statement of the neonatal mortality (the rate of deaths among live-born infants during the first month), whilst the Glasgow one is content with giving the infantile mortality (deaths within the first year of life). There is much to be said for recording separately the deaths in the first month after birth, for it is by far the most fatal month (having a rate of about 40 per 1,000 live births), and it is more than likely that the causes of death then operative are in a large measure peculiar to it. The infantile mortality in Edinburgh and Glasgow for the past six years is stated below.

	1914.	1915.	1916.	1917.	1918.	1919.
Edinburgh	110	132	100	123	94	117
Glasgow	133	143	111	129	113	114

These results are somewhat surprising and obviously close scrutiny of the factors at work will be needed before the causes of the unexpected figures become apparent. Thus the year 1916 in both cities had a lower infantile mortality than 1919, and in the case of Glasgow it was smaller than in any of the three years following; yet in both cities a mother and child welfare scheme was set agoing in 1917. More surprising still is the fact that the infantile mortality rate rose in 1919 over that of 1918, and very markedly so in the case of Edinburgh which in that very year had adopted its venereal diseases prevention and treatment scheme. Obviously one must not be tempted to lay too great stress upon variations (upward or downward) in single years, but must look to periods of years. In addition it would also be well to set forth the neonatal mortality rate for the sake of comparison and investigation, for its causation is complex and contains factors (such as prematurity or immaturity) not present at other times in the first year of life. In the meantime it would be sheer foolishness for towns to put aside as useless schemes of maternity and child welfare.

[1] Annual Report of the Public Health Department and various Sub-departments of the City of Edinburgh for the Year 1919, by A. Maxwell Williamson, M.D., B.Sc., M.O.H. Report of the Medical Officer of Health, City of Glasgow, 1914–19.

The birth rate in both Glasgow and Edinburgh continued to fall during the years of war, with in each case a slight recovery of almost the same amount in 1919 over 1918. This is brought out as follows:

	1914.	1915.	1916.	1917.	1918.	1919.
Glasgow	28.00	26.00	24.8	21.8	21.2	23.2
Edinburgh	19.9	17.9	17.5	14.8	14.5	16.6

Glasgow in each year was above the average birth rate for Scotland, and Edinburgh was below it.

The general death rate was higher in Glasgow than in Edinburgh in all the years from 1914 to 1918, but in 1919 that of Edinburgh was a shade higher than that of Glasgow (as 16.5 to 16.4). The details were as follows:

	1914.	1915.	1916.	1917.	1918.	1919.
Glasgow	16.6	18.8	15.2	15.1	16.5	16.4
Edinburgh	15.5	16.6	14.6	14.9	15.2	16.5

Many other exceedingly interesting matters are dealt with in these two reports, including such subjects as the outbreaks of influenza, malaria, and trachoma in Glasgow, and the Corporation's scheme for the prevention and treatment of the venereal diseases in Edinburgh; the whole of each report is worthy of close study.

THE MACKIE EXPEDITION.

The expedition to Central Africa, the whole of the expenses of which have been borne by Sir Peter J. Mackie of Glenreasdell, which started in May, 1919, under the leadership of the Rev. J. Roscoe, has returned. Mr. Roscoe, who is lecturer on the anthropology of Africa for the Board of Anthropological Studies in Cambridge, spent twenty-five years in the service of the Church Missionary Society in Uganda, and was therefore well qualified to lead the expedition. Its purpose was to investigate the laws, customs, and beliefs of the native tribes under British rule in Central Africa, particularly in the Uganda Protectorate. Much material with regard to the ethnology and customs of the native tribes has been collected; among other matters, inquiries were made as to the medicines used by the various tribes both for man and cattle, and specimens which were brought home are now being investigated in the Edinburgh University laboratories. Further material is on its way, and it is considered possible that useful results may be obtained.

Ireland.

MEMORIAL TO THE LATE MR. ROBERT CAMPBELL.

As announced a fortnight ago, the medical profession in Ulster has resolved to establish a fund to commemorate the pioneer work the late Mr. Robert Campbell of Belfast did for surgery in Ulster. It is proposed that the memorial shall be a prize to be awarded for distinguished work in any branch of medical science done by a member of the medical profession in Ulster or a graduate of Queen's University, Belfast. The following additional subscriptions have been received:

	£	s.	d.
J. C. Rankin	21	0	0
A. B. Mitchell	21	0	0
Andrew Fullerton ...	10	10	0
Robert Hall	5	5	0
P. T. Crymble	10	10	0
D. J. McKinney	5	5	0
J. A. Craig	21	0	0
S. T. Irwin	10	10	0
W. Porter (Portrush) ...	10	10	0
James Colville	10	10	0
Wm. St.C. Symmers ...	1	1	0
Lady Byers	21	0	0
John Rusk	5	5	0
James Moore	52	10	0
Norman Graham	2	2	0
M. F. Cahill	5	0	0
D. R. Taylor	5	5	0
R. A. Parkhill (Burton-on-Trent)	3	3	0
J. R. Lawther (York) ...	5	5	0
J. D. Boyd (Manchester)	5	5	0
George Chiene (Edinburgh)	2	2	0
W. D. Donnan (Holywood)	5	5	0
W. W. D. Thomson ...	5	5	0
W. A. Anderson	5	5	0
W. Martin (Whitehead)	3	3	0
E. Coey Bigger (Dublin)	1	1	0
R. W. Leslie	5	0	0
Total received ...	£715	14	0

In the list of subscriptions already published R. M. Beatty (Heckmondwike) should have read £5 5s., making the amount acknowledged on November 27th £456 17s. 0d.

Correspondence.

THE PROBLEMS OF "ENCEPHALITIS LETHARGICA."

SIR,—The interesting and important annotation in the BRITISH MEDICAL JOURNAL of November 27th (p. 829) cannot fail to provoke some criticism, not of the technical capacity, but of the logical methods of some able experimenters, pathologists, and others.

No proposition can be proved by deduction from premisses of which one is that the proposition to be proved is true; and specific characters for encephalitis lethargica cannot be proved by "deductions" which depend on the premisses that "encephalitis lethargica" has specific characters, and that these characters are those displayed by any particular case or group of cases under examination.

Now, as stated by you, Harvier declares that the virus of lethargic encephalitis differs from that of poliomyelitis in not being directly pathogenic to the monkey (*Rev. de Méd.*, 1920, vi). But McIntosh (*Brit. Journ. Exp. Path.*, 1920, i, 89) declares that it is so pathogenic. Assuming (as we must) that the experiments were valid, either Harvier's logic is bad or McIntosh's case was not one of encephalitis lethargica: it was, perhaps, one of poliomyelitis! But Levaditi has already stated (*C.R. Soc. Biol.*, March, 1920) that the virus of lethargic encephalitis differs from that of poliomyelitis in being directly pathogenic to rabbits. If this is so, the epidemics in Germany, in 1909, investigated by Römer (*Epidemic Infantile Paralysis*, trans. by Prentice, 1913) were not epidemics of poliomyelitis, but of a kind of encephalitis lethargica clinically indistinguishable from poliomyelitis!

The question is still further obscured by the results of Cleland and Campbell (*Journal of Hygiene*, 1920), who, logically enough, but from false premisses, conclude that their experimental observations in Australia had reference to a disease which is neither poliomyelitis nor encephalitis lethargica, and is distinct from that investigated by Breinl (*Med. Journ. of Australia*, 1918).

All these observers, assuming that there is a condition, "encephalitis lethargica," distinguishable experimentally from other "analogous" conditions, have generalized from a few particulars; forgetting that generalizations in respect of a world-wide prevalence require the synthesis of a vast number of data drawn from world-wide sources.

Nor can it be said that the pathologists (or morbid anatomists) are less exposed to criticism. Marinesco and McIntosh (Report . . . Encephalitis Lethargica, L.G.B., 1918) distinguish between encephalitis lethargica and acute poliomyelitis by saying (among other things) that in the former affection haemorrhages are not common and are microscopic (loc. cit., p. 5); while McIntosh (Ann. Rep. Chief Med. Officer, Ministry of Health, 1919–20, p. 362) impugns Strauss's experiments as not having reference to encephalitis lethargica for the reason (*inter alia*) that gross haemorrhages were produced by him in monkeys.

Yet Box (*Lancet*, 1918, ii, p. 723) and Buzzard (ibid., p. 835), amongst many others, draw attention to the gross haemorrhages sometimes seen in human encephalitis lethargica, and, as is now well known, von Economo has withdrawn, as a misnomer, the name "encephalitis lethargica" invented by him, substituting the appellation "polioencephalitis haemorrhagica epidemica" (Wieland: *Schweitze med. Woch.*, July 8th, 1920). At the same time, we have constant assurances from many sources that it is influenzal encephalitis, and not encephalitis lethargica, which really is haemorrhagic; and McIntosh and Turnbull, in the case utilized by the former for successful experiment, found *no* lesion! (Loc. cit.)

We thus are in the ludicrous position of being assured that, of lethargic encephalitis, polioencephalitis, and influenzal encephalitis, each is distinguishable from the others by a criterion which is sometimes present in all.

On the clinical side, as your annotator justly observes, "almost any combination of nervous symptoms may be produced," a point to which I repeatedly drew attention in 1918 (*Lancet*, 1920, ii, p. 216), while Netter, a determined believer in "specificity," now admits that there is a poliomyelitic form of encephalitis and an encephalitic form of poliomyelitis (*Bull. et Mém. Soc. Méd. des Hôpitaux*, 1920. pp. 557–560).

The alleged epidemiological differentiae are even less substantial. Dr. Findlay (BRITISH MEDICAL JOURNAL, 1920, ii, 820) reports cases of encephalitis lethargica in young children seen in the month of May; and Dr. McNalty (Report, Ministry of Health, cit., p. 357) reports an institutional outbreak seen in August, also ascribed to encephalitis lethargica. Yet, in 1918, we were told that encephalitis lethargica differed from poliomyelitis (1) in avoiding children, (2) in eschewing, for the winter and early spring, the summer and autumn seasons, and (3) in not exhibiting group association. Moreover, we were told that the small numbers of cases of poliomyelitis notified in 1918, during the encephalitis lethargica prevalence, argued for distinction. The argument was a bad one; but in 1919 (Report C.M.O., Ministry of Health, p. 260) it appears that the two "diseases" occurred with an equal frequency.

The fact is that not one single specific clinical, experimental, pathological, or epidemiological criterion can now be alleged in distinction between so-called encephalitis lethargica and poliomyelitis, polioencephalitis, or any other of the many forms of encephalitis, myelitis, and neuritis that are epidemic during influenza periods.

For this reason, what is known abroad as the unitarian or synthetic concept of epidemic encephalomyelitis is there gaining ground every day, being supported by Maragliano, Bignami, Chauffard, and many others, including Pic and Cruchet. At home there has been some reluctance to discuss it, and no opportunity to state it in full has yet occurred.

But it must be repeated that specific conceptions can only be maintained by specific distinctions. If it is sought to support such conceptions by detailing such criteria as the alleged *quantitative* differences between encephalitis lethargica and the so-called "analogous diseases," the reply must be that one cannot arbitrarily distribute things into different classes and then "prove" that these classes are distinguishable specifically by *assuming* that they are, and saying that so-and-so are then the *non-specific* grounds of distinction. Yet this is precisely what is attempted by those who maintain that encephalitis lethargica is a disease *sui generis*, and who, even more strangely, speak of it as a "disease" with biological characters that are now altering. (Report C.M.O., Ministry of Health, 1919–1920, p. 366.) In what sense a disease, as distinguished from either the patient or the supposed germ, can be said to have "biological properties," I cannot conceive.—I am, etc.,

London, W., Nov. 30th. F. G. CROOKSHANK.

GLOUCESTERSHIRE SCHEME FOR EXTENSION OF MEDICAL SERVICES.

SIR,—To correct any misapprehension which might result from Dr. Tedd-White's letter in your issue of November 27th, it would be well to mention:

1. The primary object of the Gloucestershire scheme is the out-patient treatment of certain sections of the population, but there is in the county a system of ambulances which will be used for the conveyance of patients requiring in-patient treatment.

2. In order that persons may be able to obtain out-patient treatment, out-stations will be arranged, so that ultimately there will be one accessible within, on the average, three miles of every part of the county.

3. The estimated initial cost of providing the out-stations was £14,000, but, in view of the rise in prices since this estimate was formed, the total cost of providing all the fifty-two out-stations may amount to a third as much again.

4. The total estimated cost of running the scheme for the first year is under £15,000, which is made up of the sums which would otherwise be used for independent arrangements for the services included in this scheme—namely, the treatment of school children, tuberculous patients, etc.

If any member of the Association would like further information as to the scope of the Gloucestershire scheme, I shall be happy in supplying it. Meanwhile I enclose for your information the latest print.—I am, etc.,

Shire Hall, Gloucester, Nov. 30th. J. MIDDLETON MARTIN.

*** Dr. Middleton Martin gave some account of the scheme to the meeting called at Bristol by the Bath and Bristol Branch of the British Medical Association on July 9th. His remarks were published in the issue of July 17th, p. 85. The pamphlet mentioned in his letter is entitled "Gloucestershire Scheme for the Extension of Medical Services"; it is published by Wellington and Co., Gloucester, price 1s.

MINER'S NYSTAGMUS.

SIR,—The two articles on the above subject which appear in your issue of November 27th will be welcomed by all who are interested in this important problem. Naturally I am specially in accord with Dr. Martin's paper, as he has developed the view which I put forward very strongly in my paper on the "Visual neuroses of miners in their relation to military service," published in your issue for March 4th, 1916. As will be noticed, I spoke of the complaint as a "visual neurosis," and claimed, as Dr. Martin has done, that it should receive much more attention from the neurologist. I hope that Dr. Martin's views will receive due attention.

Dr. Lechmere Anderson has given some interesting figures as to the prevalence of refractive errors in the disease. I think it will be generally admitted that most if not all cases show some refractive error, and I believe that some disturbance of the neuro-muscular mechanism of the eyes is a prominent factor in the origin of the symptoms. I feel, however, that his proposal to exclude from the mines cases of obvious ametropia is quite unworkable. At the recent meeting of the Illuminating Engineering Society, to which members of the Ophthalmological Section of the Royal Society of Medicine were invited, it was generally agreed, on very strong evidence, that the one practical measure which was likely to do good was the better illumination of the mines. I earnestly hope that nothing may be allowed to distract attention from this fundamental reform.—I am, etc.,

London, E.C., Nov. 29th. CHARLES F. HARFORD, M.D.

SIR,—It is with some hesitation that any one acquainted with the literature of miner's nystagmus, both before and after Llewellyn's classic essay, ventures to spill more ink on the subject. Little is yet known of the fundamental causation of these peculiar rhythmic movements, and until physiologists tell us more of rhythmic impulses both to and from the central nervous system we shall be at a loss to explain them.

But we may at least avoid inaccurate expressions in discussing the subject. Dr. Martin tells us that

> the disease is essentially one of exhaustion. First the visual centres and then the higher centres become worn out by constant effort.

But what evidence have we of constant effort on the part of the nystagmic miner? It used to be thought, on insufficient evidence (S. Snell), that this effort was put forth by the elevator muscles. I disproved this (*Brain*, 1906), and the theory is now given up. Have we advanced by putting the effort on to the nervous centres—that is, cell groups, I suppose, having to do with acuity of vision? But does the nystagmic miner, or any miner, attempt to see in the dark in any way approaching the effort put forth by an astigmatic office clerk? The latter is constantly attempting to interpret indistinct images, and at the same time to render them more distinct at the fovea. The miner in the dark probably does not use his fovea at all. In fact, he gives up all effort, and so avoids all strain. There is no evidence of strain or fatigue. What, in my opinion, has taken place is that the afferent impulses that control the normal equilibrium of the eyeball have b en put in abeyance in the dark, and replaced by other, disordered, impulses—as from the rhythmic swinging of the pick, acting through the semicircular canals.

The eyeballs are, as it were, abandoned to these, and the more or less rhythmic movements are set up. Whether these may be but an exaggeration of normal very fine imperceptible rhythmic efferent impulses we must wait to hear from the physiologists. But on this theory the idea of strain, fatigue, and effort sinks into a secondary place.

The general tremors are probably of the same nature and origin. Tremor of a limb is essentially a disturbance of the equilibrium of the limb due to loss of control, and does not in any way postulate fatigue or strain of the limb. The results of these tremors and nystagmic movements are, of course, very distressing, amounting to what we call a neurosis, as Jeaffreson emphasized many years ago.

I have said enough to show that we must not dogmatize in terms that as yet we do not understand.

I should have liked to discuss Dr. Anderson's suggestions, but I think he will not go far before he finds that some of the worst cases have no appreciable refractive error. Having had some experience in colliery practice I know how keenly any systematic examination of the eyes of young miners would be opposed by them; and knowing something of the examination of the eyes of miners' children at school in a large mining town (Mansfield) I realize how ineffective are present methods to prevent lads with grave refractive errors from going down the pit. Improved (electric) illumination has already eliminated the disease from certain areas—for example, Mines de Bruay (Pas de Calais)—as evidenced by my inquiries when in France; and if there, why not here?—I am, etc.,

Nottingham, Dec. 4th. A. CHRISTIE REID.

THE NAVAL MEDICAL SERVICE AS A CAREER.

SIR,—You have been good enough to publish from time to time various grievances of the Naval Medical Service, and were instrumental before the war in effecting some improvement thereby. That many disabilities remain it is the purpose of this letter to point out.

It is an undisputed fact that the great majority of newly qualified men who join this branch do so with almost no knowledge of the service. A fact that speaks for itself is that out of the 850 odd temporary surgeons who joined for the war and saw the medical service from within, only one in ten have accepted permanent commissions.

It is no exaggeration to say that there is great disappointment and dissatisfaction in the medical branch at the present time, and the causes of this are many and various, but some of the more important ones can be dealt with in a few words.

Professional.—There is a great lack of clinical material in a warship of any class, and for this defect no remedy seems possible, as even in a Super-Dreadnought there is not enough purely medical work to keep one doctor adequately employed, and these ships all carry at least two medical officers. There is no fair distribution of sea and hospital time, and thus many excellent officers have served from fifteen years to the whole of their career without ever having held a hospital appointment.

Treatment of medical officers during the late war is a clear index of the value placed on medical services by the executive authority. If we take the October *Navy List* and refer to the purely British decorations awarded we elicit some interesting comparisons. Counting all medical officers who entered prior to 1916 we find the percentage decorated is 13.7. For paymasters the percentage decorated is 28.8. For executive officers it is 42.2. Further, out of the 57 medical officers who have received a decoration, 42 were given the O.B.E. simple.

This marked differentiation may be due to the fact that a higher standard of gallantry is expected of the doctor than of his brother officers, but it may possibly be due to the fact that there was no medical officer on the committee for awarding decorations.

Financial.—If the intending applicant fully understood how badly naval doctors compare in this matter with their brethren in the other medical services of the Crown, there would be no candidates for the navy. Well knowing the smooth-tongued sophistry of the Admiralty, we hasten to state that we do not only mean what is called daily rate of pay, but also all the allowances, emoluments, and privileges which have a pecuniary value. In this respect the medical officer comes last of all. He receives no marriage allowance like his military brother, his wife being to all intents and purposes not recognized at all. By virtue of the fact that a military officer is married and over 30, he is entitled to married quarters or the allowance in lieu, also servant, light, fuel, and furniture allowances. No such right is extended to the naval officer, as his wife is not recognized, and as only bachelor quarters are provided, except in rare instances, he must find quarters for his wife entirely at his own expense. Further, when the naval officer is moved from one appointment to another (usually every two years or less), the expen e of moving his wife and family must be borne entirely by himself. In the case of his military brother it is met by the Crown.

The Treasury have a way of comparing the naval doctor with other naval officers when it is a question of pay or allowances, but with the army doctor when it is a question of the number of senior ranks allowed, always to the disadvantage of the naval doctor. For example, he does not receive the army doctor's good allowances, nor does he receive the executive naval officer's high proportion of senior ranks. Thus on referring to the October *Navy List* we find that of lieutenants, lieutenant commanders, and commanders 1 out of 7 may hope to become a rear admiral. With doctors 1 out of 86 may hope to reach this rank. This is with the great shortage of junior ranks (we are over 250 short). If we had the full establishment of surgeon lieutenants, only 1 in 110 could ever hope to become a surgeon rear admiral.

In the recently greatly advertised and badly needed rise of pay to all ranks the naval doctor again occupied the usual position of coming off worst of all, his percentage rise being far below that of the other branches. The few allowances he got before

the war have in nearly every case been abolished, while most of the executive allowances have been retained, and many of them increased and made free of income tax. As a glaring instance of this invidious discrimination the case of two officers of the same relative rank, each in charge of his own establishment and serving under the same Commander-in-Chief, may be quoted:

Surgeon Rear Admiral: Pay £1,916 5s. per annum. No allowances whatever (previous ones abolished).
Rear Admiral: Pay £1,825 per annum. Allowances exceeding £1,500 per annum *free of income tax* (previous allowances increased).
Surgeon Captain of Naval Hospital: Pay £1,186 5s. per annum. Allowances £67 per annum
Captain of Dockyard: Pay £1,035 per annum. Allowances exceeding £400 per annum *free of income tax.*

The above are merely instances and could be multiplied indefinitely.

Status.—The executive naval officer frankly does not accord the naval doctor the same respect that is extended to civil practitioners. (Officially, of course, he is not entitled to the same marks of respect as are paid to an executive officer of similar rank, differing in this respect from his R.A.M.C. *confrère*). This disadvantageous comparison with the civilian doctor is partly due to the fact that the executive officer can easily see the great limitation of the naval doctor's practice, and is apt to think and say that the latter's work is chiefly connected with venereal disease. He is also prone to think that the doctor must be work-shy or he would never have entered the navy. He respects him accordingly, and this stigma remains.

In view of the above, which are only a few of the many disabilities under which medical officers serve, all intending candidates would be well advised to steer clear of the Naval Medical Service.—We are, etc.,

December 1st. SIX NAVAL MEDICAL OFFICERS.

HYPNOTISM AND SUGGESTION.

SIR,—Dr. William Brown, in his lecture on psychopathology and dissociation, published in your issue of December 4th, seems to anticipate criticism of his view of hypnotism. He is not likely to be disappointed. To most psychiatrists it will appear that the subject of psychopathology is already sufficiently confused without introducing arbitrary and contradictory definitions. There is general agreement that when we speak of hypnotism we mean a state of increased suggestibility, and that by somnambulism we mean the deepest stage of hypnosis (see Forel on hypnotism, and Bonnet's *Traité pratique d'Hypnotism*). To propose to confine the term hypnosis to the ultimate phenomena of that state is only to confuse the issue.

Is it not possible that the sympathy which Dr. Brown evinces towards the views of Charqot is due to the fact that he has been operating with similar material? The soldier who succumbed to war shock was a potential neurotic before the war. It is true that the majority of them fought bravely, and only succumbed to a succession of shocks, but the predisposing cause was an inherent instability of the nervous system, which sooner or later, to a greater or lesser degree, would have shown itself under the strain of civil life. Such men, particularly when fresh from the battlefield, can readily be thrown into a state of "fugue," in which the phenomena of abreaction can be induced; but I am not at all certain that this state of fugue is identical with the state of artificially induced somnambulism such as one gets in hypnosis. It is true that, taking an average of a number of subjects drawn at random from the community, one finds that deep hypnosis with amnesia on awaking can only be produced in a minority, but I am not at all prepared to agree that this minority consists of hysterical subjects. When used for therapeutic purposes, hypnotism has very definite limitations. This is due to the fact that hypnotism cannot affect a patient unless it is presented to him in a form which his unconscious can understand. The symptoms of a neurosis have their origin deep down in the unconscious self. They are a defence mechanism by which the patient retires from responsibility as a snail into his shell. Until psychological analysis has exposed the hidden causes, suggestion slips off like water off a duck. Once the complex has been discovered, then suggestion can be put in such a way as to materially reinforce the benefits of "autognosis," to borrow Dr. Brown's useful word.

The chief value of hypnotism will be found in the removal of pain from organic cause, and in alleviating the functional aura which always surrounds organic complaints, but its usefulness in hysteria is very subsidiary. To regard hypnotism as a pathological state in the same sense as is an hysterical fugue, would be to deprive medicine of a valuable weapon.—I am, etc.,

Wylde Green, Birmingham, Dec. 6th. R. MACD. LADELL.

HOMES FOR THE TREATMENT OF INCIPIENT INSANITY.

SIR,—I beg you to allow me space to express my regret that the proposed legislation for incipient insanity appears to me to be so framed as to pander to the popular prejudice against mental diseases as being something apart from the ordinary ills of the flesh. Much has been done in recent years to educate the public out of this prejudice by the establishment of out-patient departments for mental diseases in connexion with general hospitals by the voluntary boarder system, by organizing asylums as hospitals, and by the after-care of convalescent and recovered cases in cottagers' homes. That these efforts have not been without result is proved by the experience of the Mental After-Care Association, which has now little difficulty in finding occupation for such cases, the employers being fully informed of the previous illness.

Much of this progress will, I fear, be lost by placing these houses under a special bureau unassociated either with mental or general hospitals. It is right to recall that Lord Halsbury, when Lord Chancellor, introduced similar clauses in his Lunacy Bills in 1900–1–2, and placed the supervision with the then Lunacy Commission. This new bureau has only to incur the enmity of one or two imperfectly recovered cases, and with the aid of a few well-meaning but uninformed sympathizers it will become the object of the same unreasoning vituperation and exaggerated accusations as those with which the present lunacy administration is assailed.

The proposed homes may be scattered from Land's End to Carlisle; their inspection and continuous visitation will need a bureau as expensive as that of the Board of Control which covers the same ground; it could do the work with little, if any, addition to its present staff and with far more knowledge and experience of the needs of such treatment than a new bureau is likely to possess until after many years of experience. It is obviously of great importance that the supervision of mental disease should be under one authority from incipience to after-care, if we are to learn statistically the results of treatment and the relative incidence of disease at various times and in different localities.

The bill as it at present stands makes no provision that the treatment in these homes should be conducted by persons having suitable experience, and this is a very serious omission. The Board of Control has certainly more opportunities of knowing the suitability of persons for such work than any other body can possess.

It is to be hoped that the bill, in its passage through the House of Lords, may be amended in these respects, or this greatly needed and long delayed legislation will be shorn of much of its usefulness.—I am, etc.,

London, N.W., Dec. 6th. HENRY RAYNER, M.D.Aberd.

MUSCLE RE-EDUCATION IN INFANTILE PARALYSIS.

SIR,—In your issue of November 27th Dr. Charles Mackay quotes Professor Arthur Keith's criticism of Ling's system of medical gymnastics in support of his theory:

"We have been searching Europe of the nineteenth century to discover the principles and practice of the men who sought to repair the human machine by throwing it into action, sometimes by active and at other times by passive means. It must be owned we have discovered practice rather than principle. Anyone who examines critically the writings of the modern representatives of the Swedish school will discover that Ling's system of 'medical gymnastics' has grown into a bewildering code of arbitrary and empirical practices which can be justified only by the benefits which are said to attend their application."

This must not pass unchallenged. The great merit of the Swedish method over other forms of exercises is just the fact that it is based on strict anatomical and physiological principles. All textbooks on physiology point out the important functions of muscular contractions and relaxations in the economy of the body, and it is Ling's

achievement to have shown how alternating contractions and relaxations of muscles should be carried out to secure the greatest possible physiological effect.

The fundamental principle of Ling's system is, in short, that the body, first of all, is placed in a position to provide perfect anatomical rest for the muscle or group of muscles to be exercised. The muscle is now made to contract. Each contraction, therefore, begins necessarily at zero, and is continued to its maximal capacity, followed up again by complete relaxation in the position of anatomical rest. These muscular contractions are either resisted or guided according to the power or want of power in the muscle, and repeated as often as required in each individual case or for any particular purpose of treatment.

Exercises carried out in this way are not only physiologically more effective than ordinary exercises, but as another advantage also cause no fatigue or strain, and have therefore proved invaluable in the treatment of all atonic conditions, more particularly however in atonic conditions of the heart.

That Professor Keith should have called this system "a bewildering code of arbitrary and empirical practices" is beyond my comprehension.—I am, etc.,

London, W., Nov. 29th. GUST. HAMEL.

SIR,—I cannot let Dr. Mackay's reply of November 27th to my letter of October 30th pass unnoticed.

I wish to point out that although a knowledge of the zero position may be essential for correct splinting for obtaining physiological rest, such splinting is not essential in the treatment of infantile paralysis. During the last seventy years the Swedish school have treated this disease without splinting—a method which I have always adopted—and have obtained very good results; personally I have had cases in which an absolutely perfect and complete cure took place. In the non-splinting method the zero position assumes a very minor importance, for the rule of the Swedish school has always been to place the affected limb in that position from which the greatest signs of muscular activity were obtainable.[1] Specially has this been the case with the so-called excentric movements, in which no voluntary movement may be possible from the zero position but may be readily obtainable from other ones. A perusal of A. C. Neumann's *Die Heilgymnastik*, 1852, and *Das Muskelleben des Menschen*, 1855, will soon convince the reader how minutely the actions of muscles in the various "isolation" movements had been worked out. Neumann made prolonged studies at the Central Gymnastic Institute of Stockholm from 1848 to 1851.

In any case, neither physiological rest by splinting nor appreciation of the zero position constitute a portion of muscular re-education. They are merely a preliminary to it, just as splinting a fracture in correct position is a preliminary to subsequent massage and mobilization. Dr. Mackay's definition of muscular re-education which he purposely gives in great detail in order that there may be no misunderstanding as to what is meant by it, is neither more nor less than the Swedish conception of the same by their system of movements. On it was based the Swedish method of muscular re-education in all kinds of motor paralysis, whether from hemiplegia, paraplegia, tabes dorsalis, infantile paralysis, or peripheral paralysis. A perusal of the literature from 1850 to 1870 (mostly in Swedish and German) will soon demonstrate this. Some of the works of C. F. Taylor of New York, namely, *The Movement Cure*, 1860, pp. 300–307, *Theory and Practice of the Movement Cure*, 1861, pp. 116–160, will give quite a good insight into the methods and status of motor re-education by Swedish methods sixty years ago. A case which I think must have been infantile paralysis has been described, together with the gymnastic prescription used, by Neumann (*Ath. f. d. rat. Gymn.*, 1853, I, 71–72); this is the earliest such record that I can find.—I am, etc.,

London, W.1. Dec. 4th. EDGAR F. CYRIAX.

THEORIES OF HEARING.

SIR,—In a report of the meeting of the Sheffield Medico-Chirurgical Society under the above heading in the BRITISH MEDICAL JOURNAL of December 4th, p. 859, mention is made of the possibility that the ligamentum spirale regulates the transverse tension of the basilar membrane, and this theory is attributed to Professor A. Gray. May I be permitted to quote from a paper of my own entitled, "A New Theory of Hearing," published in the *Journal of Laryngology, Rhinology, and Otology*, for April, 1914?

With regard to the share which the ligamentum spirale has in the intricate mechanism of auditory accommodation, I shall, in this communication, merely state that many experiments and clinical and histological observations have convinced me that there must be an intralabyrinthine muscle capable of altering the tension of the basilar fibres and Corti's rods, and I believe that there is sufficient evidence to warrant at least the provisional assumption that this muscle is the spiral ligament. The size of this so-called ligament is entirely disproportionate to its function, if such is merely to attach the edge of the basilar membrane to the outer wall of the labyrinth. It is, moreover, possible to demonstrate the fact that the nucleated spindles, of which it is largely composed, all radiate outwards from its attachment to the edge of the basilar membrane. My own observations, carried out upon fresh human and animal labyrinths, leave no room for personal doubt that these nucleated spindles are a form of plain muscle fibre, in many ways analogous to those which Schäfer has demonstrated as constituting the long-disputed dilator pupillae of the human eye.

Although my theory of hearing is quite new, no precedence can be claimed by myself or any living authority for the above view of the functions of the spiral ligament. Since my paper was written I have discovered that Todd and Bowman made exactly similar observations as long ago as 1856, and published them in their joint work, *Physiological Anatomy*, which appeared in that year.—I am, etc.,

Leigh, Lancs, Dec. 4th. F. PEARCE STURM, Ch.M.Aberd.

FAT-SOLUBLE CONTENT OF OILS.

SIR,—As a very recent worker on vitamines, may I be allowed to draw attention to a point which appears to be a very essential one?

A great deal of work has been and is being done in connexion with the fat-soluble content of certain edible oils. Innumerable results have been published, the technique has been described in detail, but one important (and in my opinion, from the practical standpoint, vital) detail has been omitted.

It is unfortunate, therefore, that such results as the following (I quote from the Medical Research Committee's Report, but the same remarks apply to most of the published results upon edible oils) should be practically worthless:

Description of Fat.	Distribution of Fat-Soluble A or Anti-rachitic Factor.
Cod-liver oil	+++
Lard	0
Olive oil	0
Cottonseed oil	0
Cocoanut oil	0
Linseed oil	0

A brief example will explain why this is so. Dr. Drummond has recently pointed out that in certain circumstances lard may contain the fat-soluble factor—it depends upon the nature of the pig's food. In other words, the method of production (or treatment) of the fat or oil has an all-important effect upon the fat-soluble A content. This, of course, has been well known for some time. It is common knowledge that hydrogenated oils have their fat-soluble content detroyed by the process of hydrogenation.

But there are more varieties of, say, linseed oil than the hydrogenated and the unhydrogenated, and it is a bold, and in my opinion a quite unjustifiable, statement that linseed oil contains no fat-soluble A. At the present moment I have in my laboratory a sample simply labelled "maize oil," which is waiting to be tested. If I get a negative result, I dare not say, "Maize oil contains no fat-soluble factor." Before I dare report upon the matter at all it will be necessary for me to have the history of this sample. I can then say, "Maize oil prepared by such and such a method contains no fat-soluble factor."

What I would suggest to other workers on this subject therefore is this (if their published results are to be of any practical utility): in every case where the fat-soluble A content of an oil is discussed and reported upon the history of the sample used should be given, and the process through which it has passed before it has come into the

[1] See *The Elements of Kellgren's Manual Treatment*, 1903, p. 393, and *Brit. Journ. Child. Dis.*, 1914, xi, 155–167.

hands of the worker who reports upon it. A greater precision in details of this kind will create a better impression of scientists generally, and help to remove the suspicion from the lay mind that a research worker is too often inclined to make statements which have an insufficient foundation in fact.—I am, etc.,

A. D. STAMMERS, B.A.Cantab.

Research Laboratory, Port Sunlight,
November 16th.

TUBERCULOSIS IN GUERNSEY.

SIR,—Since the discussion upon tuberculous milk was started in your columns I have received many inquiries as to the incidence and age incidence of tuberculosis in Guernsey. I would therefore ask you to publish the enclosed statistics for the ten years 1910–1919.

The average annual population was 40,832. The number of deaths registered from all forms of tuberculosis during this period was 478, and from phthisis 357.

These deaths are further subdivided as follows: Tuberculosis 47, tabes mesenterica 13, meningitis 31, peritonitis 12, joints 9, kidney 7, and lupus 2; total 478.

As regards age incidence the deaths fall under the following age periods and percentages:

Deaths Registered according to Age Periods.

		Percentage of Total Deaths.
Under 1 year	15 ...	3.1
1 to 5 years	26 ...	5.4
5 to 15 ,, ...	51 ...	10.7
15 to 25 ,, ...	122 ...	25.5
25 to 65 ,, ...	251 ...	52.5
Over 65 ,, ...	13 ...	2.7
	478	

As is always the case, a certain number of deaths from phthisis are registered as tuberculosis; but I am now ignoring these, as I do not wish to alter the registered causes of death in any way. The total death rate for the ten years under review is—tuberculosis 1.17 and phthisis 0.87.

A few remarks as to our population may not be out of place. A large number of people with damaged lungs, notably fruit growers, have settled here in the past and become permanent residents. The French population, probably during the period in question about one-twentieth of the total, numbers a large proportion of very desirable people whom any community would heartily welcome, but still furnishes us with many undesirable ones who have in the past been allowed to settle here without hindrance. The incidence of tuberculosis amongst these people is very high and also very fatal.

The figures I have given include the civil, military, and naval population for the whole period.

The climate of Guernsey would not at first sight be reckoned as suitable for all stages of phthisis. The average rainfall is 36 inches, the mean relative humidity 84, the mean annual temperature 50.9°, the mean daily range 9.9°, and the average sunshine during the past twenty-five years 1,898 hours (1919, 2,003 hours). Doubtless the humidity is somewhat high, as might be expected, yet the rainfall in this small island varies greatly. In some parts it is only 80 per cent. of the average; open, bracing, and comparatively dry spots are available, such as L'Ancresse in the north part, or sheltered and sunny valleys on the south and west coasts.

The records of sunshine speak for themselves; there are no factories or chemical works to pour poisonous products into the pure and ever-changing air. From its position, and being a small island, Guernsey is warmer in winter and cooler in summer than the mainland.

I do not think that I need enlarge further upon its great advantages as a health resort, but this I must say: The Guernsey cow (and this includes the Alderney) is the finest dairy cow in the world, as it yields milk so rich in butter fat and so free from the bacilli of tuberculosis. I cannot help thinking, as I look back upon my twenty-one years' residence here, that in this fact lies the chief reason, not only of the comparative immunity of the islanders from tuberculosis, but of the remarkably successful results of those already infected who have made Guernsey their more or less permanent home.—I am, etc.,

H. D. BISHOP,
M.O.H. States of Guernsey.

Guernsey, Nov. 29th.

SUBACUTE INFECTIVE ENDOCARDITIS.

SIR,—Dr. Cotton's article in the JOURNAL of December 4th is of interest in mentioning clubbing of the finger-tips as one of the most striking clinical features of this disease; the marked pallor of the hands often makes it most noticeable, and it is seen even in cases where there is no apparent evidence of any grave cardiac trouble. He considers a gross valvular lesion one of the chief diagnostic signs, but this is misleading unless it is recognized that his paper is dealing only with soldiers who are definitely labelled as cardiac cases, and who might be expected to show evidences of valvular disease.

At autopsy the recent infection is usually found to be imposed upon a valve which has been previously damaged, but clinically many cases occur in which auscultation fails to indicate any gross valve lesion, at any rate in the early stages of the disease.

It cannot be too strongly emphasized that subacute infective endocarditis is not primarily a disease of the heart; and if a gross valvular lesion is to be sought for at the bedside as one of the cardinal signs, many cases will be inaccurately diagnosed until late in the illness. A slight murmur may increase in intensity during the course of the complaint, but at its commencement may be almost undetected.

In a special heart clinic one would naturally be on the look-out for this disease, but in ordinary general practice it would be very misleading if one's suspicions were only aroused in patients with a marked valve lesion.

Apart from malaise and pallor, a continued low febrile condition, without any definite cardiac signs, may be the only noticeable feature for many weeks, and it may be easily overlooked; by the time the spleen has enlarged or the finger-tips have clubbed the degree of toxaemia is considerable. Patients suffering from this disease are not infrequently considered convalescent from an influenzal or rheumatic infection, until the continued malaise results in the discovery of a low fever.

Dr. Cotton's diagnostic points—pallor, enlarged spleen, and clubbed fingers—in a patient with a gross valvular lesion would naturally make one suspect the possibility of subacute infective endocarditis, but the absence of any definite valve defect would by no means negative the diagnosis.—I am, etc.,

G. LOWELL WEBB.

Bexhill-on-Sea, Dec. 5th.

VENEREAL DISEASE PROPHYLAXIS.

SIR,—The Society for the Prevention of Venereal Diseases seems to be attacking the problem at the wrong end. Instead of immediate self-disinfection being the panacea for eradicating venereal disease, it would, I do not doubt, merely weaken moral resistance—in the end the only safeguard.

The education of the young in disinfecting methods would have to be very extensive to prevent cases slipping through and keeping up infection. Such education, if seriously set about, must apply to (1) the vicious—euphemistically described as voluntary exposers to the risk; (2) the ignorant and weak; (3) the morally strong.

Among (1), the vicious, a certain amount of disease might be prevented; even that is doubtful, the assumed security increasing the chances of infection. But when these doctrines reach Class (2), the ignorant and weak, you at once set about getting recruits for Class (1), the force of example and the fancied security acting very damagingly. In Class (3) you cannot fail to weaken the high moral tone and, in certain instances, swell the numbers of Class (1).

Whether the individuals who rely on disinfection to escape venereal disease really do escape infection is a matter we may leave on one side. What is undoubtedly true is that in trying to prevent venereal disease the moral fibre of the nation would be undermined. That is in the long run a worse thing for a country than the existence of venereal disease. The innocent victims are always brought in, in every argument. It is probable that their numbers would be augmented, not decreased. But the matter is one of principle, not of sentiment. The argument of the society seems, therefore, to favour promiscuity in the attempt to eradicate venereal disease, and I am glad to hear that it is receiving no Government support.

Germ killing, useful as it is, is not the real safeguard against disease, as is notoriously the case in tuberculosis.

Improvement of health is more important in the long run than destroying germs. In this case it is the moral health—the education of the higher inhibitive powers—upon which the diminution of venereal disease will depend, and societies like the Alliance of Honour seem to me to be tackling the question in a more right and proper spirit than the Society for the Prevention of Venereal Diseases.—I am, etc.,

London, S.E., Dec. 4th. H. B. GLADSTONE, M.D.

THE STATUS OF ORTHOPAEDIC SURGERY.

SIR,—Among the most interesting and valuable remarks of Sir Robert Jones (published on November 20th) there occurs an expression of opinion which seems to me so detrimental both to orthopaedic surgery and to the hospital patient that I beg to lodge a protest.

After suggesting the group of cases which a modern orthopaedic surgeon should be prepared to treat, he goes on to say that the general surgeon may very properly urge that if so large a group of cases be taken from his wards much valuable teaching material would be lost to him, and he answers this hypothetical objection by saying:

"The general surgeon should have an absolute right to treat any case and as many of any type of cases as he desires. The orthopaedic surgeon is alone to be limited as to type. The general surgeon should not be limited by any definition of any sort."

Now, nothing could be arranged more unfairly for the orthopaedic surgeon, nor more unsatisfactorily for the patient. I say unfairly, because in actual practice under such a system only the uninteresting and tedious and difficult cases will reach the orthopaedic surgeon, while the rarities and the "good" cases will all be retained; and I say unsatisfactorily, because the patient wants to receive treatment from the expert right away, instead of waiting until after the general surgeon has made one or more unsuccessful attempts at it.

I should like further to protest against the low view which Sir Robert Jones seems to take of his speciality when he says—

A well organized orthopaedic department should prove a pleasant dumping ground to many a skilful and conscientious surgeon.

Nothing of the sort, Sir; it should be a privilege for the surgeon to be allowed to send a case to the orthopaedic department, and, if I may carry on the metaphor, the department should be a garden of growing flowers, not a waste of mouldering rubbish that nobody wants.—I am, etc.,

London, W., Nov. 27th. PAUL BERNARD ROTH.

SELF-ADMINISTRATION OF NITROUS OXIDE GAS.

SIR,—With reference to this subject, and in answer to Dr. Holmes's invitation for report upon any other known case, I beg to record the following:

Just previous to the war, while practising in a provincial town, I was called by a dentist's caretaker to see the page-boy. I found him sitting in the operating chair, dead, with the gas mask still over the face. He had evidently been playing with the apparatus, had become unconscious while sitting in the chair, and fallen forwards and sideways, jamming the mask between the left-hand arm of the chair and his face, in which position it was found. The gas cylinder had emptied itself.—I am, etc.,

Colnbrook, Nov. 13th. A. L. HEISER.

TROPICAL FLEAS.

SIR,—In the *Journal of the Royal Sanitary Institute*, September, 1919, vol. 40, No. 1, Mr. A. W. Bacot, a very well known entomologist, has given a list of fleas found on rats and the countries in which these fleas are found. He describes *Pulex irritans* as world-wide. Dr. Alcock, in his book, *Entomology for Medical Officers*, says *P. irritans* is as cosmopolitan as its host, and Patton and Cragg mention that it is found practically all over the world.

I believe that these gentlemen are incorrect. In my paper on the etiology of rheumatic fever from a tropical point of view, published in the *Transactions* of the Society of Tropical Medicine and Hygiene, January, 1920, I laid stress on the fact that neither *Pulex irritans* nor *Ceratophyllus fasciatus* has been found in the Malay Peninsula, and gave reasons for believing that neither of them occurred anywhere in the tropics at or about sea level.

Dr. Jordan, of the Rothschild Museum, Tring, was able to show me only two specimens of *P. irritans* from the tropics—one from New Guinea at an elevation of 10,000 ft., the other from India, just on the edge of the tropics.

My theory that rheumatic fever is flea-carried is founded on the geographical distribution of the disease and of *P. irritans* and *C. fasciatus*. If I am wrong about the distribution of these fleas, though I incriminate *C. fasciatus* primarily, my theory falls to the ground.

I would therefore be much obliged if the evidence on which the statements rest that *P. irritans* is ubiquitous could be published in the BRITISH MEDICAL JOURNAL.—I am, etc.,

J. TERTIUS CLARKE.

Tampin, Malacca, Straits Settlements, Oct. 31st.

Obituary.

DR. GEORGE W. W. ASHDOWN of Ripley, Derby, who died on November 25th, was born at Northampton in 1857. He received his medical education at the University of Edinburgh, where he graduated M.B., C.M. with commendation in 1880 and M.D. in 1883, when he was commended for his dissertation. After holding the post of resident physician to the Edinburgh Royal Maternity and Simpson Memorial Hospital he commenced practice at Tetbury, Glos., and removed to Ripley in 1903, where he held the posts of M.O.H. Ripley Urban District, and certifying factory surgeon, and was also on the staff of the Ripley Cottage Hospital.

DR. HAROLD EDWARD OWEN, who held a commission as captain in the New Zealand Medical Corps, died in the Military Hospital at Trentham, New Zealand, on November 18th. He was the second son of the late Thomas Edward Owen, surgeon, of Plymouth, formerly of Totnes, was educated at the London Hospital, and after taking the L.R.C.P.Lond. in 1888, went to New Zealand, where he was in practice at Raetihi, Upper Wanganui, and was honorary surgeon to the Taihape Hospital.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE following dates have been appointed for the conferring of medical and other degrees:

Friday, December 17th, at 10 a.m.; Thursday, January 20th, 1921, at 10 a.m.; Saturday, February 12th, at 2.30 p.m.; Thursday, March 3rd at 10 a.m.; Saturday, March 19th at 10 a.m.

The Sidney Ball lecture, 1921, will be delivered by M. Émile Vandervelde, Minister of Justice of Belgium.

The final edition of the University Roll of Service will be issued during the present month.

UNIVERSITY OF CAMBRIDGE.

AT a congregation, held on December 4th, the following medical degrees were conferred:

M.D.—G. D. Read.
M.B., B.CH.—M. K. Robertson.
M.B.—J. H. Burn, F. R. G. Heif.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on November 17th. A letter was read from the President of the Board of Education announcing that, subject to conditions indicated, the Government were making arrangements to conclude the purchase of the site in Bloomsbury for the headquarters of the University.

The following were recognized as teachers of the University in the subjects and at the institutions indicated:

Westminster Hospital Medical School (Bacteriology): Dr. J. A. Braxton Hicks. *St. George's Hospital Medical School (Pathology)*: Mr. Robert Donaldson. *London Hospital Medical School (Forensic Medicine)*: Mr. George Jones. *Middlesex Hospital Medical School (Medicine)*: Dr. George E. Beaumont. *London School of Medicine for Women (Dermatology)*: Mr. Haldin Davis. *University College Hospital Medical School (Surgery)*: Mr. C. C. Choyce.

Mr. C. S. Gibson, O.B.E., M.A., was appointed to the University chair of chemistry tenable at Guy's Hospital Medical School.

The title of Professor of Medicine of the University was conferred upon Dr. T. R. Elliott, C.B.E., D.S.O., F.R.S., of University College Hospital Medical School.

Dr. Herbert Tilley and Sir William Milligan have been appointed internal and external examiners respectively for the M.S. Examination, Branch IV, Oto-rhino-laryngology. Dr. Newton Pitt, O.B.E., has been appointed a member of the council of St. Thomas's Hospital Medical School. Sir Charles Ballance, K.C.M.G., C.B., and Sir William Collins, K.C.V.O., have resigned their membership of the Senate and External Council respectively.

Essays or dissertations on hyperthyroidism and its surgical treatment, for the Rogers prize, value £100, should be received by the Vice-Chancellor by April 30th, 1921.

UNIVERSITY OF EDINBURGH.

THE undermentioned candidates have passed the clinical examination for the degree of M.D.:

S. Arnott, W. M. Biden, D. A. Cadman, H. P. Caithness, T. L. Clark, F. A. E. Crew, L. S. P. Davidson, A. V. Dill, F. Dillon, J. D. Don, H. B. Dykes, J. W. Gray, G. H. Gunn, J. B. Kirk, M. Lipschitz, D. A. Miller, H. J. Parish, J. M. D. Scott, E. T. A. Stedeford, C. W. Stump, R. M. Wishart, G. G. Wray, H. D. Wright.

The Services.

LIEUT.-COLONEL H. R. KENWOOD, C.M.G., will deliver his presidential address to the Navy, Army, and R.A.F. Hygiene Group of the Society of Medical Officers of Health on Friday, December 17th, at 5 p.m., at the house of the Society, No. 1, Upper Montague Street, W.C.1. All past and present officers interested in naval and military hygiene are invited to attend.

THE name of Surgeon Commander E. Cameron, R.N., has been brought to the notice of the Secretary of State for War for valuable and distinguished services rendered in connexion with military operations in Somaliland.

DEATHS IN THE SERVICES.

LIEUT.-COLONEL WILLIAM HENRY ODLUM, Indian Medical Service, of Cappancur, Tullamore, died in the Meath Hospital, Dublin, of injuries received in a motor accident on November 25th, aged 47. He was educated in Dublin, at the Meath Hospital, where he was resident medical pupil, and took the L.R.C.P. and S.I. in 1898. He served in the South African war as a civil surgeon from April 18th to November 14th, 1900, and on the latter date took a commission as lieutenant in the R.A.M.C. On December 18th, 1907, as a captain, he exchanged into the I.M.S. At the time of his death he had just been promoted to lieutenant-colonel on attaining twenty years' service. He served in the South African war from May, 1900, to the end of the war in May, 1902, in the operations in the Orange River Colony, was present in the actions at Biddulphsberg, Bethlehem, Wittebergen, Witpoort, Ladybrand, and Caledon River, was mentioned in dispatches in the *London Gazette* of November 15th, 1901, and received the Queen's medal with three clasps and the King's medal with two clasps. He had also served in the recent war, and was mentioned in dispatches in the *London Gazette* of June 22nd, 1915. Before he came home on furlough he was in command of the Indian station hospital at Jhansi.

Medical News.

SIR AUCKLAND GEDDES attended the first meeting of the fifteenth International Congress against Alcoholism, recently held in Washington, and the British Government was represented at the remaining meetings by a member of the staff of the Embassy at Washington.

DR. J. W. BALLANTYNE of Edinburgh has been elected an honorary member of the American Child Hygiene Association. It was founded in 1909 as the American Association for the Study and Prevention of Infantile Mortality, but two years ago changed its name to conform to its enlarged activities. The Association holds an annual meeting and publishes transactions; it also issues a magazine entitled *Mother and Child*.

A MEETING of the Harveian Society of London will be held at No. 11, Chandos Street, Cavendish Square, on December 16th at 8.30 p.m., when a discussion on the Future of the Poor Law Infirmary will be introduced by Dr. C. M. Wilson and Dr. Charles Buttar, who will be followed by Mr. E. W. Morris (House Governor, London Hospital) and others.

DR. H. SALOMON, of Leicester, has been awarded a Government grant for successful vaccination in his district, and Dr. W. Millar, of Welton, East Yorks, has been awarded a grant for the sixth time.

A MEETING of the Society of Superintendents of Tuberculosis Institutions will be held at 122, Harley Street, at 4 p.m., on Monday, December 13th, when reports will be submitted by committees on standards of medical and nursing staffs and on the co-ordination of tuberculosis statistics. A discussion will also take place on a scheme of sickness insurance for ex-patients.

LIEUT.-COLONEL C. I. ELLIS, C.M.G., M.D., R.A.M.C.(T.), of Torquay, has been made a Knight of Grace of the Order of St. John of Jerusalem for services rendered to the Order.

AT the November session of the Central Midwives Board for England and Wales, with Sir Francis Champneys in the chair, eleven midwives were removed from the roll. Dr. Fairbairn and the secretary were nominated as representatives to give evidence as to the training of midwives in respect of the prevention of ophthalmia neonatorum before the Committee on the Causes and Prevention of Blindness, and Dr. Pilliet was invited to attend. Dr. Cuthbert Lockyer having tendered his resignation as one of the Board's examiners for the London centre, the vacancy was filled by the appointment of Dr. Malcolm Donaldson. It was decided to approve the principle of payment by the Board, at its discretion, as from January, 1921, of the expenses of officials or other persons attending as witnesses on behalf of the prosecution at the hearing of penal cases.

THE House of Lords, on December 3rd, decided a case in which the Fife Coal Company appealed against a judgement in the Court of Sessions. A miner had met with an accident and was paid compensation, at first for total and afterwards for partial incapacity. The company sought to terminate the payment of compensation on the ground that the miner's continued incapacity was due to unreasonable conduct, consisting in a refusal to undergo a surgical operation; his refusal was in accordance with the advice of his own doctor. The House of Lords dismissed the appeal, the Lord Chancellor observing that there might be a nice balance in the mind of a sagacious man which advice he would accept when one set of doctors recommended one course and his own doctor another.

THE December meeting of the Newcastle-upon-Tyne and Northern Counties Medical Society was held on December 3rd in Newcastle-upon-Tyne. In the afternoon an address was delivered in the Connaught Hall by Sir William Macewen, Regius Professor of Surgery in the University of Glasgow. His subject was "Remarks on Carcinoma of the Extremities of the Alimentary Tract, Tongue, and Rectum." The address, which was illustrated by lantern slides, was most interesting and original, and was listened to by a large and attentive audience. In the evening the annual dinner of the Society was held in the Barras Bridge Assembly Rooms. Dr. J. W. Smith presided, and the guests were Professor Sir William Macewen and Professor David Drummond, the President-elect of the British Medical Association for 1921. Considerably over 100 medical men were present, and a most enjoyable evening was spent.

THE Probate Court has declared in favour of a will made by the late Dr. Charles A. Mercier, about the form of which there was some doubt which the Public Trustee considered should be set at rest. One of the testamentary dispositions concerned the establishment of a professional chair of rational logic and scientific method. The testator bequeathed all his property to the Public Trustee to carry out this and other trusts. To the Royal College of Physicians of London he left the two silver-gilt Swiney cups which had been awarded to him, and also a set of great fire-irons of fifteenth century Italian workmanship.

THE London County Council has decided to promote legislation to enable it to pay coroners a fixed salary. This proposal forms part of a larger scheme for amending the law relating to inquests, but the present time is not judged favourable for submitting to Parliament the complete scheme. A fixed salary for coroners would involve the transfer to the Council of the obligation to pay certain expenses of office which are now met indirectly through the coroner's gross salary, and at its meeting last month the Council resolved to include in its application for further powers the power to appoint and pay deputy coroners and to exercise reasonable control over the employment by a coroner of a deputy.

IN an action for damages against a chemist, heard at the recent Leeds Assizes, the plaintiff alleged that he had suffered serious injury owing to a lotion prescribed for ear disease being inaccurately dispensed. The amount of carbolic acid which should have been present was 6.2 per cent.; the amount found on analysis was 10.2 per cent. It was suggested that the carbolic acid had accumulated at the bottom of the bottle. The jury awarded the plaintiff £500 damages.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"R. S." has taken over a practice and has been assessed to income tax on the basis of his predecessor's profits for the past three years. He asks: Is this correct?

*** Yes; the fact that the previous earnings of our correspondent have been less does not affect the assessment for the period subsequent to purchase of the practice, as the average applies strictly to the practice and not to the individual. If, however, his earnings for the current year fall short of the sum at which he has been assessed, by reason of the change of practitioners or of some other specific fact, he will be entitled to a reduction of the assessment accordingly.

"J. H.," being invalided out of the R.A.M.C., returned to civil life, and went to reside in another town on the request of the Scottish War Emergency Committee to set free the local M.O.H. for war service. He has since returned to take up his own appointment, and the assessor declines to admit the expense of removal and return as allowable for income tax.

*** In point of law the assessor's ruling seems correct, though its application in these particular circumstances seems distinctly hard. We have been told that during the war special allowances were given to munition workers whom circumstances compelled to live away from their homes, and the expenses in this case seem closely analogous. Possibly our correspondent might be able to represent his case in this light to the local inspector or the Board of Inland Revenue, and induce them to grant him some relief from the legal hardship. With regard to subscriptions to medical associations and the cost of new books, we are of opinion that they are admissible to the extent necessary to maintain that up-to-date knowledge which is essential to the proper performance of his duties. The allowance for rent in the case of a general practitioner usually varies from one-half to two-thirds; in the case of an income derived from an appointment the proportion of the house used for the purposes of the work is usually much less; there is no fixed rule, but one-eighth is the fraction applicable to a clergyman using a study for his work, and the analogy is sometimes applied to other persons.

W. R. A. C." inquires as to the expenses to be claimed from a separate assessment on his salary as a medical officer of health.

*** It is almost impossible to arrive at an accurate figure for the amount of the expenses incurred in connexion with the appointment regarded separately. We suggest that the best means of dealing with the question is to calculate the expenses for the practice as a whole, and then to make some reasonable division of the total sum between the appointment and the work as a general practitioner. The more usual way of dealing with the question is to make one return under Schedule D for the whole of the earnings; in the normal case this seems preferable.

"J. A. S." inquires as to the method of claiming the allowance in respect of bank interest paid in full from a taxed income.

*** The local inspector appears to have misunderstood the claim made. We believe that there are special forms of claim obtainable, one page of which is completed by the bank and one by the taxpayer. We suggest that "J. A. S." might write once more to the local inspector pointing out that his claim is in respect of "bank interest paid by" him, and asking for a copy of the appropriate form.

LETTERS, NOTES, ETC.

THE LOUSE AS DISEASE CARRIER.

DR. EDMOND SERGENT, Director of the Pasteur Institute, Algiers, has written to us on the question of priority in the suggestion that the louse plays a part in the dissemination of human diseases. It seems best to give Dr. Sergent's statements in English.

He was moved to write to us by a reference to the matter in a letter published on March 13th last from Major F. P. Mackie, I.M.S. Major Mackie there said that the credit of priority should be given to him, owing to the statements contained in a paper by him published in the BRITISH MEDICAL JOURNAL of December 14th, 1907. Dr. Sergent points out that Major Mackie was led to conclude that lice played a part in the propagation of relapsing fever from his epidemiological observations in India. Dr. Sergent says that, independently of Mackie, he and H. Foley at the same period (1907) were studying the same question in the Sud-Oranais, Algeria. The conditions were very favourable to the inquiry, and they were able to demonstrate that the louse alone could be concerned in the propagation of an epidemic of relapsing fever which they had observed during the winter. When Mackie's researches became known to them in 1908 Sergent and Foley at once published their results (*Bull. Soc. Path. Exot.*, March 4th, 1908). They continued their researches and in the same year produced the crucial proof that North African relapsing fever, due as they had shown to *Sp. berbera*, was exclusively transmitted by the louse. This proof was that the spirochaetosis was conveyed to two healthy persons by lice placed on their clothing under conditions fulfilling the most rigorous requirements as to complete isolation in an environment which had been disinfected and disinfested. (The facts were published in a complete memoir on recurrent fever in Algeria in May, 1910. *Ann. Inst. Pasteur.*)

Then in 1912 C. Nicolle, L. Blaizot, and E. Conseil (*C.R. Acad. des Sci.*, June 10th, 1912, August 26th, 1912; *Ann. Inst. Pasteur*, March 25th, 1913; *Arch. Inst. Pasteur*, Tunis, 1913) described in Tunis the development of the spirochaetes in the louse, their apparent disappearance after an infected meal, and their reappearance from the sixth to the eighth day in the form of very small elements which grew slowly. In 1908, in 1911, and then in 1914 Sergent and Foley showed that when in this invisible stage the spirochaetes in the body of the louse were particularly virulent (*Bull. Soc. Path. Exot.*, July 12th, 1911; *C.R. Acad. des Sci.*, July 6th, 1914); they demonstrated that the virus existed in the circulating blood of man and that it was virulent for monkeys in the afebrile interval between the two attacks of recurrent fever, that is, at a time when it is impossible to discover a spirochaete under the microscope. The virus therefore has an invisible virulent stage not only in the louse but in man (*C.R. Acad. des Sci.*, June 22nd, 1914). Dr. Sergent considers that the facts established with regard to the part played by lice in the transmission of human diseases may be thus summarized:

1. On the one hand, Mackie in India, in December, 1907, and on the other, Sergent and Foley in Algeria, in March, 1908, established the part played by the louse in the transmission of relapsing fever by epidemiological observation.
2. In November, 1908, Sergent and Foley proved by experiments the exclusive part played by the louse in the transmission of relapsing fever.
3. C. Nicolle and Conseil demonstrated experimentally in 1909 the part played by the louse in the transmission of typhus fever.
4. Anglo-American observations in 1918 established experimentally the part played by the louse in the transmission of trench fever.

POSTURE IN DEFAECATION.

DR. D. DE V. HUGO (Capetown) writes: Dr. Vickery's recommendation (BRITISH MEDICAL JOURNAL, August 21st, 1920) to follow Nature's posture in the act of defaecation is by no means a new observation. I met my old teacher, the late Sir John Chiene, when on his way home after the Boer war, and in reply to my remark that I hoped he was carrying back a good many valuable practical experiences to his classes, he told me the campaign had, among other things, taught him that the construction of the w.c. seat was wrong in principle, and he gave me many reasons. Later on I visited England, and I saw a model, constructed according to his design, exhibited at the British Medical Association meeting held at Exeter. The seat was low and sloped backwards, while two arm rests were provided at the sides. The user had to sit straight up, and I need not go into details to show how Nature's needs were met in every way by the enforced posture.

MENSTRUATION DURING SCHOOL LIFE.

DR. F. D. BANA (Bombay) writes: I have read Dr. Alice Clow's paper on menstruation during school life in the BRITISH MEDICAL JOURNAL of October 2nd, 1920, and Dr. Mary Andrews's note in the next issue wherein she says: "Though a natural function, menstruation is a temporary drain on a girl's vital energy, and it calls for special care." I quite agree with her, and do not wonder at the folly of the athletic girl who went in for violent exercise during her early courses of menstruation now paying the penalty for those excesses. This reminds me of a very good principle we Indians have in India. As a rule, including us Parsis, there is a custom that no girl or woman should do any heavy work, even domestic work, for at least three days during her course, and is bidden to rest, by isolation in a separate room and bed. With us Parsis the good old orthodox way was to enjoin her not to touch anybody, not even furniture, clothes, etc., save metal utensils. She is given a separate glass bowl and tray for her meals and has to occupy a room downstairs specially kept for the purpose. This was enjoined as a strict religious behest up till now; and the principle was good, as it gave her good rest and kept her to herself in a way. Anything or anybody touching her was believed to be contaminated. Unfortunately this is being given up now, and a Parsi girl of the present day neither likes to occupy a separate room nor bed during her course and goes about as she likes, too often, as in the case cited by Dr. Mary Andrews, taking some sort of exercise or other and thus undermining her constitution, for which she is more often sorry when she comes to bear children, or later in life when she suffers from menstrual irregularities. I am not an advocate of total confinement or the isolation system, yet I consider that during her course there is a large amount of katabolic changes occurring in the female system—that a little more rest, a little more discretion, is all that is needed, and not violent or active exercise.

THREE GENERATIONS OF HOUSE-SURGEONS.

DR. EDWARD JEPSON tells us that three generations of Jepsons have been house-surgeons at St. Bartholomew's Hospital. He writes:

Edward Cane Jepson, F.R.C.S., L.S.A., was house-surgeon about the year 1835 in the time of Lawrence, Stanley, and Earle; before chloroform came into use, when tartar emetic was given, and bleeding was freely carried out. He used to recount how the "Charlies" proclaimed the hour in the night and the state of the weather. For about fifty years he practised in Durham City and retired to Scarborough, where he died in 1895.

Edward Jepson, M.D., M.R.C.S., L.S.A., son of the above, was house-surgeon to Callender about the year 1870 and house-physician to Dr. Black the year following. He had much to do with the first introduction of a Flower Mission in the hospital, through the kindness of Lady Stanley, wife of Dean Stanley of Westminster. He practised in Durham City for forty years, and is now living at Ruislip.

Baly William Jepson, M.R.C.S., L.R.C.P., late Captain R.A.M.C., nephew of Edward Jepson, was severely wounded in the war. He is now junior house-surgeon to Sir Gordon Watson. He is named Baly after Dr. Baly, assistant physician to the hospital and Physician to Queen Victoria many years ago; also a great friend of Edward Cane Jepson.

UNSUCCESSFUL APPLICATIONS FOR PUBLIC POSTS.

A CORRESPONDENT writes: It seems to be not uncommon for public authorities, who have advertised public medical appointments, to fail to send a notification to unsuccessful candidates that the vacancy has been filled. Such an omission, besides being discourteous, is apt to inconvenience applicants, who, it should be remembered, have been put to considerable effort and expense in the procuring, printing, and postage of testimonials, etc. No doubt the omission may be traced to the negligence of clerical officials rather than of medical officers of health; but the latter could use their influence in preventing such breaches of good manners.

A BEE AND A WASP.

DR. T. S. MACAULAY (Seremban, Federated Malay States) sends the following note:

A young planter came to see me in urgent haste, saying he had a bee in his ear. He had been walking over a young clearing, and had occasion to jump a log, thus disturbing a nest of small black wood bees, which rose up and enveloped him. One landed on the side of his face, whereat he gave himself a slap over the ear. He felt a loud, buzzing, and very unpleasant noise in his ear. On arrival at the bungalow a friend tried to spear the insect with a tiepin, but without success. When I examined with the speculum I could see a dark mass, far in, like a small plug of wax. After syringing with a simple warm alkaline lotion for ten minutes or so a small, half-drowned native bee was delivered. A few soothing drops were instilled, and the young man returned to the estate much relieved.

I received an urgent message to attend the manager of a large rubber estate. I found him very ill in bed. He told me that on walking through one of the fields he wandered into the danger zone of a wasps' nest; he beat a hurried retreat, and escaped with one sting under the right eye. He proceeded to the bungalow, lay down, felt nauseated, and vomited on two occasions. Later he fainted, and had the feeling that he was passing out. When I saw him he was prostrate, the right eye was bunged up, the face much swollen, his body covered with a red scarlatina-like rash, the pulse was 140 and feeble, the temperature 102° F., and altogether he was very miserable. Simple stimulant treatment with warm alkaline baths revived him. He told me that on a former occasion two stings had almost killed him, and he believes that in his case three or more would involve a fatal issue. The local wasp is larger than the home variety, and the natives are quite aware of its dangerous sting, and take every opportunity of burning the nests.

ANTI-VIVISECTION IN AMERICA.

THE "referendum" in California, which included proposals on behalf of anti-vivisection and anti-vaccination, was decided, on November 2nd, by the popular vote. The anti-vivisection bill was defeated by a large majority; the anti-vaccination bill was defeated by a majority not so large. The upholders of the anti-vivisection bill seem to have worked hard for it; we hear of "waggons toted about the streets with stuffed dogs having their jaws pried open with clamps." All's well that ends well; but the work of popular education must be continued. There was a time when our profession stood aside from the work, but both in this country and in America we are beginning to see that our duty to the State includes the duty of teaching people to understand the character and the purposes of medical and surgical methods, and the principles on which these methods were founded and are maintained.

THE ANGLO-AMERICAN UNIVERSITY LIBRARY FOR CENTRAL EUROPE.

IN connexion with the relief work in Central Europe, attention has been drawn to the privations suffered by university teachers. Owing to the unfavourable rate of exchange and the high cost of living the prices of recent English and American books and papers on philosophical, scientific, and literary subjects have made it impossible for the universities of Central Europe to keep in touch with English and American thought. A scheme has, therefore, been formed to establish under British-American auspices an Anglo-American university library for Central Europe; the president is Viscount Bryce, O.M. The committee is assured that Central Europe desires and welcomes its help, and reports that the necessary organization is ready on the one side to receive, catalogue, and transmit publications, and on the other to distribute them. Several consignments of literature have already been dispatched. Books and periodicals in English published since 1914, will be accepted as loans or gifts, and may be sent to the honorary secretary, Mr. B. M. Headicar, London School of Economics, Clare Market, W.C.2.

NUMBER PLATES ON MOTOR VEHICLES.

THE Automobile Association directs the attention of motorists to the need for the exercise of greater care regarding their number plates. A large number of prosecutions are taking place every day, and the technical offences committed include—incorrect dimensions of letters and figures and insufficient spaces between them; inadequacy of the margin between the registration mark and the top, bottom, or ends of the plate; allowing the letters or figures to become faint, obscured by mud and dust, or—in the case of motor cycles—by the clothing of persons riding on the carrier. Any motorist who is in doubt as to the accuracy of his number plate can verify his position by communicating with the Automobile Association, Fanum House, Whitcomb Street, London, W.C.2.

ERRATUM.

THERE was an obvious slip in the obituary notice of Mr. Willard in last week's JOURNAL (p. 874). The word "formerly," in the ninth line, should be "for nearly."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 70, 73, 74, 75, 76, and 77 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 71, 72, and 73.

THE appointment of certifying factory surgeon at Barnstaple (Devon) is vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	7	6
Each additional line...	0	1	3
Whole single column	6	0	0
Whole page	16	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.